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CASES OF INFLUENZA REPORTED BY STATES.

COMPARISON OF THE FIRST EIGHT WEEKS OF THE YEARS 1920, 1921, AND 1922.

The accompanying table shows the number of cases of influenza reported for the first eight weeks of 1922 by 24 States, compared with similar reports for the corresponding weeks of the years 1920 and 1921.

All weeks ended on Saturday. The first week of 1922 ended January 7; in 1921 the first week ended January 8; and in 1920 it ended January 10.

Number of cases of influenza reported by States for the first eight weeks of the years 1920 to 1922, inclusive.

State.	Week number.							
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.
Alabama:								
1922.....	2		5	3	26	95	29	20
1921.....						5	11	
1920.....			8	203	1,296	3,236	2,366	3,603
Arkansas:								
1922.....	83	40	64	88	192	232	158	202
1921.....	63	78	75	37	52	70	19	94
1920.....	35	53	179	595	5,666	6,599	2,793	1,690
California:								
1922.....	38		28	48	92	845	4,315	10,033
1921.....	22	23	30	37		98		194
1920.....	32	322	1,604	7,133	13,660	11,887	7,420	5,527
Connecticut:								
1922.....	5	7	9	22	109	518	1,325	675
1921.....	13	14	13	13	8	9	12	18
1920.....	1	14	1,123	4,664	5,666	4,868	2,771	1,183
Delaware:								
1922.....			5	2	7	2	2	9
1921.....	9	12	12	4	2	7	19	20
1920.....	1		5	21	86	78	43	36
District of Columbia:								
1922.....	1	3	4	7	5	9	8	7
1921.....	2	2	2	4	4	1	1	1
1920.....	9	126	1,216	1,616	557	298	104	36
Florida:								
1922.....	3	6	21	6	15	35	123	118
1921.....	6	3	4	10	3	6	4	4
1920.....	2	10	484	1,547	1,581	1,735	1,420	1,026
Georgia:								
1922.....	21	19	52	64	74	81	128	162
1921.....	30	24	26	25	37	26	35	8
1920.....	27	27	95	617	3,256	5,411	7,809	8,210
Illinois:								
1922.....	25	49	38	125	108	417	633	1,069
1921.....	42	18	27	19	28	35	34	23
1920.....	73	3,251	14,805	29,156	30,330	23,037	7,237	3,062
Kansas:								
1922.....	9	23	88	121	364	440	480	901
1921.....	13	9	13	29	5	9	9	12
1920.....	17	45	1,130	8,582	16,969	17,699	10,026	3,590

Number of cases of influenza reported by States for the first eight weeks of the years 1920 to 1922, inclusive—Continued.

State.	Week number.							
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.
Kentucky:								
1922.....	17	25	18	51	332	640	705	748
1921.....	10	8	40	19	33	21	25	28
1920.....	45	75	170	878	2,536	6,067	4,295	8,584
Louisiana:								
1922.....	7	8	4	8	10	39	36	368
1921.....	39			10			22	
1920.....	52	27	123	763	1,001	3,690	3,153	3,363
Maine:								
1922.....	5	9	18	14	97	145	131	441
1921.....	18	6	14	7	1	2	2	1
1920.....	1	4		387	936	3,942	3,702	2,134
Maryland:								
1922.....	21	40	52	93	110	189	255	431
1921.....	70	79	82	107	125	164	143	279
1920.....					4,935	8,942	4,758	3,184
Massachusetts:								
1922.....	7	12	18	66	398	1,460	1,764	1,285
1921.....	37	63	39	15	17	37	32	
1920.....	46	58	489	4,495	9,627	10,747	5,601	2,375
Missouri:								
1922.....	7	16	8	20	71	99	234	313
1921.....	51	48	40	43	26	32	30	22
1920.....				4,043	5,359	1,696	466	
Nebraska:								
1922.....					6	6	10	161
1921.....	3	4	1	1	9	2		5
1920.....	2	1	154	1,815	3,998	6,048	3,272	2,492
New Jersey:								
1922.....	28	36	40	126	426	1,288	1,555	918
1921.....	34	26	22	33	32	20	94	51
1920.....	23	98	753	7,365	9,603	5,807	2,798	1,043
New Mexico:								
1922.....			1		10	14	35	92
1921.....				2	1	6		5
1920.....	8	4	61	260	1,576	1,166	632	204
New York (exclusive of New York City):								
1922.....	28	48	80	173	694	771	1,577	1,568
1921.....	86	109	96	79	43	44	63	44
1920.....	31	61	555	4,755	11,616	13,259	11,304	5,330
New York City:								
1922.....	56	57	110	1,230	5,731	7,070	3,284	1,312
1921.....	134	78	84	72	59	84	109	102
1920.....	100	384	5,690	30,456	21,388	8,091	3,030	1,099
Texas:								
1922.....	48		5	5	57	141	123	76
1921.....	39	24			9	113	8	39
1920.....					11,265	6,788	1,035	588
Vermont:								
1922.....		1		1	7	2	12	1
1921.....	5	1	2	3	6	1		3
1920.....			25	89	272	796	1,314	1,071
Washington:								
1922.....			1	33	176	1,061	902	360
1921.....								
1920.....			12	902	6,451	6,426	4,596	1,559
Wisconsin:								
1922.....	46	17	59	22	24	37	22	73
1921.....	64	81	44	43	25	48	22	62
1920.....	3	67	1,944	6,739	14,328	10,310	6,274	3,131
Total:								
1922.....	457	416	728	2,328	9,141	15,645	17,854	21,343
1921.....	790	710	666	612	525	840	694	1,015
1920.....	508	4,627	30,625	117,081	184,849	168,623	98,219	64,090
Number of States reporting cases:								
1922.....	19	17	22	22	24	24	24	24
1921.....	21	20	19	21	20	22	19	20
1920.....	18	17	20	22	24	24	24	22

DEATHS FROM INFLUENZA AND PNEUMONIA COMBINED.

COMPARISON OF THE FIRST EIGHT WEEKS OF THE YEARS 1919-1922, INCLUSIVE, FOR CERTAIN LARGE CITIES OF THE UNITED STATES.

The accompanying table gives the number of reported deaths from influenza and pneumonia (all forms), combined, during the first eight weeks of the years 1919, 1920, 1921, and 1922, in 36 large cities of the United States.

This is a continuation of the table printed on pages 389-391 of the Public Health Reports of February 24, 1922 (vol. 37, No. 8).

The weeks for which figures are given all ended on Saturday, the "first" week for each year ending on the following days, respectively: January 4, 1919, January 10, 1920, January 8, 1921, and January 7, 1922.

The figures for 1919 and 1920 were taken from the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce, supplemented by reports to the Public Health Service. For 1921 and 1922 the figures are taken from reports made by the city health officers to the Public Health Service.

Blanks in the table indicate that no reports of deaths from influenza or pneumonia were received for the week. This does not always indicate that no deaths from these diseases occurred. In the eighth week of 1922 it means in most instances that the report has been delayed.

Number of deaths from influenza and pneumonia (all forms) combined.

City.	Week number.							
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.
Birmingham, Ala.:								
1922.....	8	10	14	6	13	4	4	14
1921.....	7	14	6	4	9	9	12	6
1920.....	13	9	16	14	22	18	59	70
1919.....	36	44	52	41	29	21	28	25
Los Angeles, Calif.:								
1922.....	18	19	14	21	26	29	33	79
1921.....	12	19	9	13	15	12	17	15
1920.....	16	18	19	22	42	88	74	57
1919.....	99	151	178	177	104	47	21	8
Oakland, Calif.:								
1922.....	4	5	5	6	8	8	12	.....
1921.....	4	3	8	7	9	4	6	4
1920.....	4	8	20	24	55	54	60	21
1919.....	66	92	111	67	38	18	18	13
San Francisco, Calif.:								
1922.....	11	12	4	12	9	15	36	79
1921.....	.....	5	8	9	7	11	13	6
1920.....	14	26	48	59	115	137	113	89
1919.....	194	290	310	149	59	41	20	18
Denver, Colo.:								
1922.....	22	11	10	17	18	16	19	22
1921.....	25	22	23	11	16	21	20	13
1920.....	21	18	24	40	159	160	67	44
1919.....	65	47	35	24	29	30	37	29
New Haven, Conn.:								
1922.....	5	1	5	4	13	10	14	30
1921.....	4	7	7	7	2	6	9	9
1920.....	6	8	10	19	20	60	68	31
1919.....	40	38	27	26	20	12	11	6
Washington, D. C.:								
1922.....	29	22	27	27	25	22	27	26
1921.....	22	22	14	9	9	12	19	24
1920.....	22	27	81	181	164	92	55	30
1919.....	139	109	107	73	60	42	40	28

¹ Pneumonia (all forms) deaths only.

Number of deaths from influenza and pneumonia (all forms) combined—Continued.

City.	Week number.							
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.
Atlanta, Ga.:								
1922.....	13	7	9	7	20	17	11	16
1921.....	10	8	9	5	7	18	10	11
1920.....	19	11	10	15	32	75	104	75
1919.....	140	140	154	157	154	128	121	125
Chicago, Ill.:								
1922.....	48	43	63	65	72	80	56	94
1921.....	64	79	89	102	92	90	75	79
1920.....	107	153	472	1,109	1,005	494	243	136
1919.....	321	269	328	341	277	194	235	233
Indianapolis, Ind.:								
1922.....	20	11	9	17	29	42	39	38
1921.....	15	12	13	13	21	6	13	6
1920.....	18	16	21	36	92	124	72	49
1919.....	34	40	25	28	25	23	28	33
Louisville, Ky.:								
1922.....	6	12	18	7	16	24	28	25
1921.....	6	4	5	5	2	2	9	13
1920.....	10	10	9	18	40	52	48	30
1919.....	22	20	21	30	20	19	19	37
New Orleans, La.:								
1922.....	13	14	14	13	4	25	20	19
1921.....	18	18	21	13	12	21	23	14
1920.....	27	27	27	32	36	62	89	76
1919.....	94	141	202	201	125	58	49	44
Baltimore, Md.:								
1922.....	32	25	24	26	29	27	29	40
1921.....	33	20	24	18	26	56	44	44
1920.....	20	35	24	59	122	208	231	123
1919.....	48	75	83	150	138	126	117	90
Boston, Mass.:								
1922.....	21	17	36	28	33	38	51	83
1921.....	27	23	36	33	22	10	26	21
1920.....	28	28	45	85	158	255	216	136
1919.....	244	227	158	153	110	89	71	72
Cambridge, Mass.:								
1922.....	5	8	3	4	7	7	8	9
1921.....	4	5	5	5	1	3	4	4
1920.....	8	7	8	14	22	28	23	13
1919.....	39	22	20	16	15	10	3	6
Fall River, Mass.:								
1922.....	5	4	3	6	5	7	9	22
1921.....	14	5	11	4	5	8	5	3
1920.....	7	10	5	3	5	16	25	19
1919.....	10	18	16	14	17	17	15	17
Lowell, Mass.:								
1922.....	4	7	5	4	4	6	5	13
1921.....	7	6	8	3	6	4	2	3
1920.....	5	4	2	7	12	10	36	29
1919.....	13	10	20	26	11	17	18	4
Worcester, Mass.:								
1922.....	5	10	11	7	16	16	16	15
1921.....	4	7	13	9	4	10	12	7
1920.....	10	9	7	14	15	44	52	34
1919.....	40	36	44	22	23	21	23	28
Minneapolis, Minn.:								
1922.....	10	6	9	9	6	9	4	8
1921.....	13	14	10	8	10	16	20	18
1920.....	12	10	9	63	168	125	53	13
1919.....	37	45	24	32	31	31	14	34
St. Paul, Minn.:								
1922.....	7	13	7	3	8	6	6	5
1921.....	9	5	9	9	.....	7	8	5
1920.....	4	10	26	75	80	63	26	14
1919.....	39	25	14	12	15	13	11	12
Kansas City, Mo.:								
1922.....	15	13	14	25	25	28	39	71
1921.....	17	17	19	13	14	17	16	16
1920.....	13	29	96	120	220	167	74	53
1919.....	49	50	68	45	58	40	51	46
Omaha, Nebr.:								
1922.....	11	9	17	12	16	12	11	17
1921.....	8	7	4	14	.....	4	12	11
1920.....	4	7	13	45	62	63	32	28
1919.....	25	25	17	17	11	12	10	12

¹ Pneumonia (all forms), deaths only.² Influenza deaths only.

Number of deaths from influenza and pneumonia (all forms) combined—Continued.

City.	Week number.							
	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.
Newark, N. J.:								
1922.....	13	15	20	20	33	29	39	44
1921.....	18	14	15	7	12	13	12	13
1920.....	17	14	30	55	116	142	93	54
1919.....	72	66	57	53	50	45	32	46
Buffalo, N. Y.:								
1922.....	6	20	13	19	21	15	15	20
1921.....	20	18	18	20	13	18	20	18
1920.....	10	7	19	17	67	141	145	98
1919.....	48	19	90	123	90	75	35	34
New York, N. Y.:								
1922.....	215	263	284	302	481	596	576	548
1921.....	235	216	204	203	199	212	212	269
1920.....	218	261	511	1,308	1,988	1,796	987	513
1919.....	753	870	998	1,193	1,153	893	786	788
Rochester, N. Y.:								
1922.....	5	11	12	14	6	7	14	11
1921.....	4	3	6	8	5	5	4	8
1920.....	13	7	12	23	50	52	27	19
1919.....	59	26	17	21	12	16	16	18
Syracuse, N. Y.:								
1922.....	4	6	4	6	7	7		
1921.....	4	8	3	5	6	2	7	4
1920.....	9	8	10	31	89	78	29	23
1919.....	8	13	4	14	18	10	10	18
Cincinnati, Ohio:								
1922.....	14	20	15	19	21	27	41	54
1921.....	14	16	13	11	18	16	17	16
1920.....	14	12	17	25	38	62	81	99
1919.....	51	18	18	26	23	39	37	78
Cleveland, Ohio:								
1922.....			30	28	25	18	25	60
1921.....	25	22	23	24	31	28	31	27
1920.....	21	25	26	41	158	258	177	125
1919.....	132	94	92	92	108	100	80	82
Columbus, Ohio:								
1922.....	5	9	4	10	8	6	10	11
1921.....	8	12	12	13	12	12	7	9
1920.....	15	9	8	22	59	118	66	48
1919.....	15	14	10	20	19	11	15	20
Toledo, Ohio:								
1922.....	6	9	8	12	7	6	5	6
1921.....		3	9	10	5	4	3	8
1920.....	9	8	9	18	54	50	50	26
1919.....	19	15	19	20	15	6	11	21
Portland, Oreg.:								
1922.....	4	7	4	6	5	15	17	27
1921.....	6	5	7	6	4	8	5	4
1920.....	13	8	9	17	21	57	52	41
1919.....	55	101	123	122	50	15	10	12
Philadelphia, Pa.:								
1922.....	73	98	87	86	85	91	101	162
1921.....	72	83	85	101	114	108	115	108
1920.....	55	75	108	153	289	564	620	373
1919.....	142	194	229	259	368	262	252	231
Providence, R. I.:								
1922.....	13	8	12	17	11	15	26	32
1921.....	14	6	5	8	14	11	9	14
1920.....	12	13	8	14	39	88	92	57
1919.....	47	59	62	61	35	30	28	11
Nashville, Tenn.:								
1922.....	2	7		3	5	5	4	10
1921.....	2	8	4		10	9	9	9
1920.....	6	11	6	12	8	23	47	62
1919.....	20	17	21	21	17	15	16	23
Richmond, Va.:								
1922.....	8	9	9	4	8	9	12	21
1921.....	5	5	13	6	5	7	10	9
1920.....	2	9	6	21	35	38	28	13
1919.....	50	26	34	30	23	11	9	9
Total:								
1922.....	671	761	823	872	1,125	1,294	1,362	1,731
1921.....	750	737	768	725	738	800	835	848
1920.....	802	947	1,771	3,820	5,657	5,922	4,314	2,721
1919.....	3,165	3,346	3,698	3,756	3,180	2,427	2,167	2,191

* Pneumonia (all forms) deaths only.

AMINO-ACID DEFICIENCY PROBABLY THE PRIMARY ETIOLOGICAL FACTOR IN PELLAGRA.

By JOSEPH GOLDBERGER, Surgeon, and W. F. TANNER, Passed Assistant Surgeon, United States Public Health Service.

Introduction.

There is now at hand a considerable and convincing body of evidence in support of the view that diet is the primary controlling factor in the prevention and causation of pellagra. The more important part of this evidence may briefly be summarized as follows:

To begin with, account must be taken of the fact that no unequivocal evidence of the transmissibility of the disease has yet been adduced. Attempts to communicate the disease from the sick to the well by inoculation have failed in all reported instances (1, 2, 4, 5, 6). The report of a successful inoculation of a monkey by Harris (7) must be regarded, therefore, as in the highest degree doubtful; all the more as exhaustive efforts to confirm it, notably by Lavinder and Francis (8) and by Harris himself, have failed.

In harmony with the negative results of experimental inoculation are the striking freedom from danger attaching to association and contact with cases in hospitals and the singular exemption of certain groups of residents in an endemic or epidemic institutional environment. It has repeatedly been observed, first, that at institutions (whether special or general hospitals) receiving cases of pellagra for treatment, physicians, nurses, attendants, etc., in frequent contact with the disease and directly or indirectly with the body discharges of persons sick with it, practically never develop the disease while so employed (9, 10, 11, 12); second, that employees (nurses, attendants, etc.) resident in institutions in which the disease has long been endemic or at times epidemic, many of whom also come in frequent association or intimate contact with cases of the disease or their body discharges or both, practically never contract it while so employed and so resident (11, 13).¹

The striking exemption of certain groups residing in an endemic institutional environment has been found, in the instances studied by us, to be consistently associated with a significant difference in diet.

¹ In an interesting account of medico-military observations in Rumania during the war, Kütz (Arch. f. Schiffs u. Trop. Hyg. 1918, vol. 22, pp. 401-403), a German Army surgeon with the army of occupation, remarks that "the fact that the several hundred thousand of the military personnel, in spite of the closest contact with the Rumanian population (among whom pellagra was prevalent), remained free from the disease, is evidence of very great weight in support of the argument against infection." Of similar import seem to be the conclusions of a recent Italian pellagra commission [Lustig and Franchetti: *Lo Spermiendale*, 1921], as may be seen by the following taken from a review of this commission's report by J. Rosslyn Earp (Trop. Dis. Bull. 1921, vol. 18, p. 226): "During the period of hostilities when many infectious diseases, especially tuberculosis and malaria, showed a marked rise in morbidity, pellagra, on the other hand, diminished. They consider this important evidence in support of the theory that pellagra is a deficiency disease. This theory obtains further credit from the fact that during the war the diet of the rural populations was both richer and more varied than it had been formerly. The idea that an infection may be carried in certain foods is further discredited in that war conditions resulted in an unusual amount of transport of foodstuffs."

The controlling importance of diet is shown by the part it plays in the treatment, prevention, and production of the disease. Active cases of pellagra respond promptly and strikingly to an exclusively dietary treatment (14, 23). The relatively rare exceptions are no more than might be anticipated when the experience in scurvy and beriberi are kept in mind. The natural tendency to recovery without change of environment, and seemingly without therapeutic interference, is associated with a seasonal change in diet (15).

Of outstanding significance are, on the one hand, the demonstration that pellagra may be completely prevented by means of a suitable diet, without intervention of any other known factor, hygienic or sanitary (16, 17, 18, 19), and, on the other, the absence of any sound evidence that the disease is preventable by any other means (20, 21).

Although, as has already been stated, all attempts to transmit the disease from the sick to the well by inoculation have failed, an experiment to induce the disease in the human subject by feeding, carried out by Goldberger and Wheeler (21, 22) in 1915, was completely successful. At least 6 of 11 convicts who volunteered for the experiment and who subsisted on a diet consisting principally of the cereals, wheat, maize, and rice, with pork fat and some fresh vegetables (sweet potatoes, turnips, cabbage, greens), developed evidence which experienced observers recognized as that of pellagra; whereas, of a large number of controls, none presented any evidence justifying even a suspicion of the disease. In this connection it may be noted that symptoms and pathological changes resembling more or less markedly, but not certainly identical with, those occurring in pellagra have been reported in animals experimentally fed certain faulty diets (23, 24, 25, 26).

Finally, reference should perhaps also be made to the idea that in the causation of the disease there is, besides diet, also an essential infective factor. According to this a faulty diet operates merely by lowering resistance to infection. This view has elsewhere already been discussed by Goldberger and Wheeler (21), who have shown that it is untenable except in the form that a poor nutrition of a specific kind, the result of a faulty diet, is essential to enable the hypothetical infection to establish itself; that is, in the form calling for the concurrence of two specific extrinsic factors.

With respect to this more restricted conception it may be said, first, that it implicitly recognizes diet as the primary controlling factor; second, that unequivocal evidence of the existence of an essential infective factor has not yet been adduced; and, finally, that all the well-ascertained phenomena of the disease are either explicable by or at least not inconsistent with an exclusively dietary etiology, thus rendering superfluous the assumption of a second essential factor.

While it thus is clear that in the prevention and causation of pellagra, diet plays the dominating rôle, the question of the essential dietary factor or factors concerned is still undetermined.

In this paper we desire to record certain observations which bear directly on this question. First, however, we shall pass in review the literature more or less closely related thereto.

Review of Literature.

A review of the older literature which, in the main, concerned itself with maize, particularly spoiled maize, although very interesting in retrospect, does not seem sufficiently pertinent in the present connection to warrant full presentation. It will suffice to recall the theory elaborated by Lussana and Frua and the closely related view advocated by Calmarza. Lussana and Frua (24) contended that pellagra is due to an "insufficient neuromuscular repair" arising from "an alimentation of proteinaceous insufficiency in comparison with nondeficient respiratory quota" in a diet "fundamentally and almost exclusively composed of maize." This theory of relative protein insufficiency in pellagra may almost be considered the prototype of the theory advanced over a score of years later by Takaki¹ (28) in connection with beriberi and a rice diet.

Among other evidence adduced by Lussana and Frua in support of their contention was the markedly more favorable result of dietetic ("restorative nutritive") treatment based on their own theory than that obtained by treatment based on other hypotheses.

In this connection reference may be made to the fundamentally rather closely related theory suggested a few years ago by Deeks (29). Deeks seems to group pellagra with "hyperchlorhydria," "flatulent dyspepsias," "acute rheumatism and rheumatic affections," and "nephritis," as a "carbohydrate diathesis." He believes that it is not corn alone "but any cereal or starch food in conjunction with cane sugar, in a warm climate where there is lessened metabolic activity and consequent inadequate elaboration of digestive elements which initiates the autointoxication responsible for the symptom-complex known as pellagra." "The proof thereof," he goes on to say, "lies not in the determination of the elusive complex physico-chemical substances, the result of fermentation or defective metabolic elaboration, but in the results obtained by physiological treatment based on the above-mentioned hypothesis." His treatment consists "(1) in limiting the nourishment absolutely to fresh fruit juice, preferably orange, meat broths, and milk, as long as there is nausea or vomiting, and the absolute avoidance of everything which

¹ Takaki stated his theory as follows: "The various investigations made during the past four years lead me to the conclusion, finding no other possible cause, that a wide departure of nitrogen and carbon from the standard proportion (1 to 15) essential to the maintenance of health, resulting from a great deficiency of nitrogenous substances and a great excess of carbohydrates in food, is the cause of kak'ke [beriberi]."

contains sweet or starchy elements; (2) in the administration of from 15 to 30 drops of dilute nitric acid in three-fourths of a tumbler of water three times daily on an empty stomach. I have found by practical experience" he states, "that no substance will relieve as quickly or as satisfactorily gastric acidity as this mineral acid. When the stomach condition improves, which is generally in three or four days, a carbohydrate-free diet is ordered. This consists, in addition to the above, of eggs, meats of all kinds, fish, green vegetables, such as lettuce, celery, onions, tomatoes, beets, carrots, spinach, chayoti, vegetable marrow, okra, green peas, string beans, egg plant, etc., and fresh fruits of all kinds, there being no limitation." It may here be remarked, as has already been pointed out by Goldberger, Wheeler, and Sydenstricker (44), that the idea that the production of pellagra is dependent on the excessive consumption of carbohydrates was suggested at least as far back as 1796 by Albera and by Strambio (69). The essentials of Deeks's treatment are those of a long line of his predecessors, beginning with Casal himself.

Calmarza (4) like many (if not most) Spanish students of the disease denied that maize had any necessary connection with pellagra and vigorously contended that the disease was due solely to an alimentation deficient in animal food, a diet too largely vegetable, providing, he claimed, too little nitrogen for human needs. Calmarza's contention did not receive the attention which it merited largely because of Costallat and Roussel (3), who, being enthusiastic zeists, cast doubt upon the diagnosis of the cases of pellagra without maize reported by Calmarza and other Spanish observers.

The views relating to the nature of the dietary defect that may be considered as immediately pertinent to the present discussion date from 1912. In that year Funk (30) included pellagra provisionally in a group of "deficiency diseases," all of which, he stated, could be prevented and cured by the addition of certain preventive substances called by him "vitamines."

Inspired by Funk's work and the other, then recent, developments in beriberi, Sandwith (31) suggested that pellagra might be a "deficiency disease, waiting for a 'vitamin' to be discovered." At the same time, having in mind the work of Wilcock and Hopkins with zein, he vaguely suggested the possibility of a tryptophan deficiency on the basis, it would seem, of the mistaken impression that zein was the sole protein of maize, and in the belief that inferior or damaged maize was the cause of pellagra.

In 1914 Nightingale (32) from his experience with a disease which he called "zeism," but which must be regarded as pellagra, concluded that the disease was due to the loss of some essential nutritive constituent during the process of grinding maize into meal, "probably of the nature of an organic salt." This recalls the suggestion made

by Petrof (50) in 1907 that pellagra is due to a deficiency in phosphorous. Petrof attempted to show that this deficiency arose as the result of a maize diet, of which the maize was poor in phosphorus, its poverty in phosphorus arising from being cultivated in a lime-poor soil.

In 1914, also, there was suggested by Voegtlin (33) that in the study of the etiology of pellagra, serious consideration would have to be given to "(1) a deficiency or absence of certain vitamins in the diet; (2) the toxic effect of some substances, as aluminum, which occur in certain vegetable food; (3) a deficiency of the diet in certain amino-acids." Later, in a study of the influence of vitamins on the clinical course of pellagra, Voegtlin, in association with Neil and Hunter (34), reported that the administration of extracts from yeast and rice polishings, which were highly efficient for the prevention of avian polyneuritis, in general failed to modify the course of the disease, but the administration to pellagrins of protein-free extracts obtained from liver and thymus gland presumed to contain both the antineuritic substance and the fat soluble vitamin "was followed by an improvement in their condition apparently comparable to that produced by the consumption of a diet rich in fresh animal proteins." The conclusion drawn was that "the dietary defect responsible for pellagra is distinctly (qualitatively) different from and perhaps more complex than the one causing fowl polyneuritis and human beriberi."

McCollum, Simmonds, and Parsons, as a result of studies of faulty diets in rats (35) expressed the belief that pellagra is primarily associated with the unsatisfactory character of three dietary factors, namely, fat-soluble A, mineral elements, and protein mixture. A year later these workers, after having attempted to produce in rats a condition analogous to pellagra in man by feeding their animals with diets similar to the diet employed by Goldberger and Wheeler in their experiment on convicts, and observing in them only a "generalized poor condition," concluded that pellagra is caused by an infectious agent (36). It may be remarked that this conclusion appears in large measure to be based on the unwarranted assumption that the distinctive symptoms observed in man, resulting from feeding a given diet, must necessarily be exactly reproduced in another species, in this case the rat.

As a result of his experience with pellagra among Armenian refugees, White (17) has suggested that the causal factor may be a deficiency of vitamin or of some other essential components of the diet, such as tryptophane or an insufficiency or unsuitability of one of the proximate principles in the dietary, such as the protein or fat.

On White's invitation, Wilson (37) examined the diet concerned in the outbreak among these refugees and as a result expressed the opinion that the most probable cause of the outbreak was, first of all,

the low biological value of protein, next, the low total energy value, and, finally, the low fat value. Wilson gave the results of his further studies to the committee of enquiry which investigated the outbreak of pellagra among Turkish prisoners of war. This committee (38) concluded that pellagra is due to deficiency in protein, as gauged by its biological value.

Recently a full report of Wilson's important studies have appeared (39). In this he makes comparisons of diets known to have been connected with pellagra with those of known value in curing and preventing the disease, from which he concludes that the etiological factor is a deficiency of protein in the food, best determined by an estimation of its biological value by means of Thomas's figures. He argues against a deficiency in vitamins, citing a markedly favorable effect in the reduction of pellagra observed among the inmates of the Abassia Asylum for the Insane at Cairo, following the addition of 45 grams of meat and 50 of milk to a diet which already containing 100 grams of meat, 50 grams of milk, and 300 grams of fresh vegetables, it was difficult for him "to suppose was lacking in either vitamins, using the term generally, or in salts of lime, or that the additions made could have added anything of great importance in these respects." The deficiency of protein may, he considers, be "(a) primary, in which the supply is insufficient for the individual requirement or, when, owing to the indigestible character of the food, a somewhat restricted supply can not be utilized to the normal extent; (b) secondary, in which, owing to digestive disturbances or other causes, the supply of protein can not be assimilated." He looks upon indicanuria as an important indication of the loss of protein in the intestine, the amount present being, he estimates, sometimes sufficient to account for the loss to the body of a large proportion of the protein intake. He considers the indicanuria as closely related to the deficiency of gastric hydrochloric acid. Labor, by raising the level of protein requirement, especially when there is a deficient energy supply, is considered a factor in the causation of pellagra. He suggests that a deficiency of cholesterol may be related to some of the symptoms.

Wood (40) from some experiments with fowls, and by reason of seemingly favorable results of treatment with maize germ and wheat bran, is disposed to suspect that a vitamin-B deficiency is involved in pellagra. However, he points out that there may be something else in the maize germ and the cortex of wheat that may account for the results observed. It may be remarked that there is nothing to show that other changes in the diet made at the same time could not explain the favorable results Wood attributes to maize germ and wheat bran.

In April, 1920, Chick and Hume (25) reported symptoms resembling those of pellagra, produced in three monkeys by prolonged feeding on a low protein diet in which the proteins, almost exclusively those of maize, were at the same time of low biological value. Whether the condition of malnutrition produced in these animals may properly be regarded as corresponding to that of pellagra in man, depends, in the present state of our knowledge, on whether the eruption observed in one of the animals actually corresponded to the dermatitis of pellagra in man. So far as may be judged by the published description and colored drawing of the eruption, this is very doubtful. That some of the symptoms observed in these monkeys may have been due to an amino-acid deficiency in the experimental diet seems not improbable, and the improvement reported as having been observed in two of the three animals treated with tryptophane would suggest that a deficiency in at least this one amino-acid was involved in the cause of the malnutrition observed in these animals.

McCarrison (26) has called attention to the parallelism of symptoms and pathological lesions of pellagra with those in the animals (monkeys) experimentally fed by him on vitamine-deficient diets. On the basis of these analogies he considers it probable "that deficiency of vitamins and the consequent disturbance of digestive and endocrine functions play an important part in the production of pellagra." Certain other considerations lead him to believe "that pellagra may result either from deficient protein supply or from deficient protein assimilation consequent on vitamine insufficiency or from a combination of both these causes." McCarrison does not seem to have actually worked with the disease himself.

According to Hess (41) "the experiences in the Central Empires during the war render it improbable that pellagra is due merely to a lack of adequate protein. Adequate protein was lacking to a marked degree—milk, cheese, eggs, meat were all unavailable. Nevertheless there was no prevalence of pellagra throughout these years." Evidently Hess assumes that the protein of milk, cheese, eggs, and meat alone is "adequate" protein.

Impressed by certain striking epidemiological features and the negative results of animal inoculation experiments, Goldberger (42) suggested in 1914 that pellagra is a disease essentially of dietary origin caused either by a deficiency in the diet of some essential element or by the presence of some element in excessive amounts; that is, by a diet faulty in some undetermined respect, but the fault in which could be corrected by an increase in the fresh animal food component (13, 14).

In 1918 Goldberger, Wheeler, and Sydenstricker (43) reported that the indications afforded by a study of the diet of nonpellagrous and

of pellagrous households clearly suggested that the pellagra-producing dietary fault is the result of some one or, more probably, of a combination of two or more, of the following factors: (1) A physiologically defective protein supply; (2) a low or inadequate supply of fat-soluble vitamine; (3) a low or inadequate supply of water-soluble vitamine; and (4) a defective mineral supply.

In harmony with these indications are those afforded by the result of Goldberger and Wheeler's (21) feeding experiment in convicts. The experimental diet, they state, was probably faulty in some degree with respect to the protein, mineral element, antineuritic, and, possibly also, with respect to the fat-soluble vitamine. From this they inferred that in relation to the production of pellagra their study suggested that the dietary factors to be considered as possibly essential are an amino-acid deficiency, a deficient or faulty constitution of the mineral element, possibly, but doubtfully, a deficiency in the fat-soluble vitamine, and perhaps some as yet unknown factor.

In a more detailed report of the study of the diet of nonpellagrous and of pellagrous households, Goldberger, Wheeler, and Sydenstricker (44) conclude that the indications of their study suggest that "the pellagra-producing dietary fault is the result of some one or of a combination or combinations of two or more of the following factors: (1) A physiologically defective protein (amino-acid) supply; (2) a defective or inadequate mineral supply; (3) a deficiency in an as yet unknown dietary essential (vitamine?), none of the known vitamins being regarded as necessary factors.

Present Study of Preventive Dietary Factors.

The following gives the details of some observations which were made in the course of studies of the prevention of pellagra at the Georgia State Sanitarium, one of the large southern asylums for the insane. We are deeply grateful to the trustees and officers of this institution for their sustained interest and cooperation.

I. *Mineral supplement.*—The high value which our experience at this asylum and the other Service investigations had taught us to attach to milk, both as a prophylactic and therapeutic agent, suggested, among other things, the possibility that its value might be due to the inorganic elements of its ash. We therefore arranged to supplement the institution diet of a group of colored and one of white patients with an inorganic salt mixture, each daily dose of which contained the inorganic elements of the ash in a liter of whole milk (45), this quantity of fresh whole milk as a supplement to the institution diet having shown itself to have decidedly beneficial effects in both prevention and treatment. We began with a single mixture of the following composition (quantities for one individual per day) pre-

pared for us by Dr. Atherton Seidell, of the division of chemistry of the Hygienic Laboratory:

	Grams.
CaH PO ₄ 2H ₂ O.....	5.15
Na ₂ SO ₄	1.51
Mg Cl ₂	0.47
KCl.....	1.49
K ₃ C ₆ H ₅ O ₇ H ₂ O.....	1.79
Iron and ammonium citrate (17 per cent Fe).....	.07

Having experienced some administrative difficulties in its use on a large scale, it was replaced at the end of about one month by two mixtures which were suggested and prepared for us by Dr. Elias Elvove, of the division of chemistry of the Hygienic Laboratory. Together these furnished, qualitatively and quantitatively, the same inorganic elements as had the first mixture, but each could be separately dissolved in water and thus conveniently mixed with the food.

The composition of each of these is as follows (for one individual per day):

Mixture A

	Grams.
Ca(C ₂ H ₃ O ₂) ₂ H ₂ O.....	4.187
CaCl ₂	0.685
Mg Cl ₂	0.470
KCl.....	0.495
NaCl.....	0.054
FeCl ₃	0.007

Mixture B.

Na ₂ SO ₄	1.510
KH ₂ PO ₄	4.079

Mixture B, in aqueous solution, was stirred up with the breakfast cereal and hash and A with the food at the mid-day meal. In order to make sure of a liberal supply of iodine, we began, at about the time the change to the two mixtures (A and B) was made, the daily addition to the evening meal of two drops of the sirup of the iodid of iron (U. S. P.). Incidentally, this increased somewhat the allowance of iron, an element in which the ash of milk is poor.

The amount of each of the nine mineral elements believed to be essential in mammalian nutrition which these daily supplements yielded is shown in the following table, which has been prepared to permit also of a comparison with the elements yielded by the salt mixtures extensively used in their studies by Osborne and Mendel (46) and by McCollum (47) and associates, respectively.

TABLE I.—Number of grams of the specified elements yielded by the daily supplement of minerals and a comparison with quantities which would be yielded by salt mixtures extensively used by Osborne and Mendel and by McCollum, respectively, if supplied to yield the same amount of Ca.

	Ca.	Mg.	K.	Na.	P.	Cl.	S.	Fe.	I.
Mixtures A and B, with 2 drops of sirup of iodid of iron (U. S. P.).....	1.20	0.12	1.43	0.51	0.93	1.06	0.34	0.0034	0.005
Mixture of Osborne and Mendel.....	1.20	.16	.87	.30	.72	1.12	.07	.023	^a .0003
Mixture No. 185, of McCollum.....	1.20	.24	1.88	.55	1.66	.46	.31	.83	^b Trace.

^a Besides the elements shown in the table, this mixture includes traces of fluorine and aluminum.

^b Supplied in the drinking water.

It will be noted that while there are some differences among these three mixtures, there is a quite marked general similarity in the quantity of the elements yielded. On the basis of an identical yield of calcium the quantity of K, Na, P, and Cl supplied by our minerals is seen to be intermediate between that furnished by the mixture of Osborne and Mendel on the one hand and that of McCollum on the other. Our supplements differed perhaps most markedly from either of the other mixtures in the much lower yield by ours of iron.

At this juncture it may be noted that the bulk of the institution diet—the diet of the inmates whose attacks of pellagra we are about to consider—consisted of the cereals maize, wheat, and rice, some dried legumes, and a little beef. The mineral element supplied by such diet is, according to McCollum (48), too low in the elements sodium, chlorine, and calcium.

Recalling that in the preparation of the various dishes constituting the diet, table salt is always freely used, there could here, therefore, quite independently of the mineral supplements, at no time be a question of an inadequate supply of the elements sodium and chlorine. According to Sherman (45) the standard allowance of calcium in a man of 70 kilograms, with an energy requirement of 3,000 calories, should be 0.69 gram. Accepting this, it follows that our mineral supplement afforded a very liberal supply of this element, and there can thus be no question of a calcium deficiency in the diet so supplemented even when this was not entirely consumed.

In spite of the undoubted improvement in the institution diet thus brought about, a number of cases of pellagra occurred in individuals consuming it. Following is a brief summary of the significant points in the history of five cases in individuals known to have consumed during considerable periods practically their entire allowance of minerals.

Case 1. C-O: White female, age 32, weight 44.5 kilograms, had pellagra in 1913, 1914, and again in October, 1920. Began taking the mineral supplement on December 10, at which time she presented

no recognizable symptoms of pellagra. The sirup of the iodid of iron was begun on January 25. On the following June 7 this patient developed a pellagrous dermatitis, notwithstanding that during this period of at least 4½ months she consumed practically 100 per cent of the minerals furnished.

Case 2. H-L. L: White female, age 44, weight 35.8 kilograms, had pellagra 1912, 1914, and 1918. Began taking the mineral supplement December 10, and the sirup of the iodid of iron on January 25. On the following June 17 this patient developed the distinctive dermatitis, although it is estimated that she consumed during the interval fully 95 per cent of the minerals furnished.

Case 3. K-S: White female, age 54, weight 62.5 kilograms, had pellagra 1915, 1918, and again in September, 1920. Began taking the mineral supplement on December 10, at which time she was free from recognizable symptoms of pellagra. Administration of the sirup of the iodid of iron was begun January 25. On May 4 she developed the dermatitis of pellagra, although her record of food consumption during the interval indicated an intake of fully 95 per cent of the minerals furnished.

Case 4. S-E: Colored female, age 55, weight 39.2 kilograms, had pellagra in 1915, 1918, and again in August, 1920. Began taking the mineral supplement on December 16, by which time she was free of recognizable symptoms of pellagra. The sirup of the iodid of iron was begun on January 26. On the following May 30 she developed the dermatitis of pellagra, although she is recorded as having taken during the interval fully 95 per cent of the minerals.

Case 5. W-M: Colored female, age 55, weight 41 kilograms, had pellagra in 1917, 1918, 1919, in April, and a second dermal attack early in November, 1920. Like "S-E" she began taking the mineral supplement on December 16, by which time recognizable symptoms of pellagra had disappeared. The sirup of the iodid of iron was begun on January 26. On April 4 this patient developed the dermatitis of pellagra, although in the interval she consumed, we estimate, fully 95 per cent of the minerals furnished.

II. *Vitamines with supplement of minerals.*—Although, as will presently be indicated, there is reason to believe that the institution diet includes, in general, sufficient of the vitamine-containing foods to provide at least the minimum requirement of the known vitamins, the supply of these, particularly of vitamins C and A, is quite irregular and fluctuates widely, depending as it here does practically exclusively on the supply of fresh vegetables, a supply that is markedly influenced by season and other factors affecting availability. The supply of vitamine B fluctuates less and is more regular than that of C and A, since such sources of this vitamine as unbolted maize (51) meal in form of corn bread is daily, and legumes (52) (lima beans,

navy beans, or cowpeas) are frequently (though irregularly) served at the midday meal. Accordingly, with the object of further improving the diet by correcting the possible faults arising from these causes, we replaced, on and after May 24, the fluctuating and irregular supply of fresh vegetables in the diet of those receiving the supplement of minerals, with a regular daily supply of 3 ounces of the juice expressed from canned tomatoes, and one-half ounce of cod-liver oil, and, on June 19, the variable and irregular supply of legumes with a regular daily ration of at least one-half ounce of cowpeas.

In this connection it may be observed that canned tomato juice has been shown to be an excellent antiscorbutic (53, 54, 55, 56). In comparison with lemon and orange juice, its antiscorbutic power would seem to be somewhat inferior. According to Hess, 4 c. c. daily of strained canned tomato juice are sufficient to protect the guinea pig, whereas of either orange or lemon juice only about 3 c. c. daily are required (57)—a ratio of about 4 to 3.

Recalling that the experience of the British Navy and of Arctic expeditions has amply demonstrated that not over 1 ounce of lemon juice fully protects the sailor and the Arctic explorer against scurvy (58, 59), it would follow, on the basis of this ratio, that about $1\frac{1}{3}$ ounces of canned tomato juice should serve the same purpose. Our allowance of 3 ounces daily for these small, inactive inmates would therefore seem to be a very liberal one.

Tomato juice has also been found to be quite rich in the water-soluble and the fat-soluble vitamines. Its antineuritic potency is indicated by the fact that Hess and Unger (55) have found that pigeons suffering from polyneuritis could be cured by giving them 5 c. c. of this foodstuff daily. Presumably a smaller quantity would suffice to prevent the development of the polyneuritis in this highly susceptible animal. As a source of fat-soluble vitamines, tomato juice is far inferior to cod-liver oil.

This oil, of all foods so far studied, would seem to be the richest in vitamine A. Some samples quantitatively tested have been found 250 times as potent as butter (60, 61). Allowing for variations in potency of different samples and assuming that the sample used by us had only 10 per cent of this value, the daily administration of half an ounce of the oil would, on this extremely conservative basis, be equivalent to a daily consumption of the vitamine in some 12 ounces of butter. So far as can be judged, this quantity of butter would supply more than enough vitamine A for any human need. It would appear reasonably certain, therefore, that our cod-liver oil supplement alone furnished a more than ample quota of this food essential.

Besides its exceptional richness in the anti-xerophthalmic essential, cod-liver oil, it may be noted, seems also to carry an abundance of an as yet not fully defined antirachitic factor (62, 63).

Notwithstanding these advantageous additions and modifications, three cases of pellagra developed in individuals known to have taken all of the cod-liver oil and tomato juice and to have consumed practically all of the cowpeas and minerals furnished. The following is a summary of the significant points in the history of these cases.

Case 6. J-F: Colored female, age 45, weight 54 kilograms; had pellagra in 1914 and again in April, 1920. Began taking the mineral supplement December 14, 1920, at which time she was free of active symptoms of pellagra. Beginning January 26, she was given 2 drops of the sirup of the iodid of iron daily. On May 24, began taking cod-liver oil (one-half ounce) and canned tomato juice (3 ounces) daily. Between June 3 and August 13 consumed daily, among other things, an average of approximately 1 ounce of dry cowpeas (boiled) and about 2 ounces of unbolted maize meal (as corn bread). After August 13 the daily consumption of cowpeas averaged approximately one-half ounce and of whole maize meal $3\frac{1}{2}$ –4 ounces. Throughout she took practically all of the mineral addition. Notwithstanding all this, however, this patient developed the beginning of a pellagrous dermatitis on August 24.

Case 7. S-M. L: Colored female, age 37, weight 43.6 kilograms. Had pellagra in October, 1920. Began taking the mineral supplement on December 14, at which time she was free from active symptoms of pellagra. On January 26 she began receiving 2 drops of the sirup of iodid of iron daily. On May 24 began taking cod-liver oil (one-half ounce) and tomato juice (3 ounces) daily. Between June 3 and August 13 consumed daily, among other things, an average of approximately 1 ounce of dry cowpeas (boiled) and about 2 ounces of unbolted maize meal (as corn bread). After August 13 the daily consumption of cowpeas averaged approximately one-half ounce and of maize meal approximately $3\frac{1}{2}$ –4 ounces. Throughout she consumed practically all the mineral supplements. In spite of all this, however, this patient developed a mild but classical pellagrous dermatitis on September 16, 1921.

Case 8. T-E: Colored female; age 28, weight 40.2 kilograms. Had pellagra in October, 1916, and again in June, 1920. On December 14, at which time she was free of active symptoms of pellagra, began taking the mineral supplement. On January 26 she began receiving 2 drops of the sirup of iodid of iron daily with her supper. On May 24 she began taking cod-liver oil (one-half ounce) and tomato juice (3 ounces) daily. Between June 3 and August 13 she consumed daily, among other things, an average of approximately 1 ounce of dry cowpeas and $1\frac{1}{2}$ –2 ounces of unbolted maize meal (as corn bread). After August 13 the daily consumption of cowpeas averaged approximately one-half ounce and of maize meal $3\frac{1}{2}$ –4 ounces.

On September 19 this patient developed the beginning of a pellagrous dermatitis in spite of having consumed practically all of the minerals and vitamins furnished during a period of at least four months.

In addition to the foregoing we observed two cases in individuals who, because of capricious appetities, had not so regularly consumed the entire mineral supplement nor quite all the cowpeas, but who, by reason of the separate administration of the tomato juice and cod-liver oil, were known to have consumed all of their allowance of these foodstuffs. The significant points in the histories of these two cases are as follows.

Case 9. P-A: Colored female, age 45, weight 40.2 kilograms. Had pellagra in 1917, 1918, and 1919, and October, 1920. She was free from active symptoms of pellagra on December 14, 1920, when she began taking the mineral supplement. On January 26 she began receiving 2 drops of the sirup of iodid of iron daily. On May 24 began taking and thereafter took regularly fully one-half ounce of cod-liver oil and 3 ounces of tomato juice daily. Between June 3 and August 13 she consumed regularly as part of her diet practically all of a daily allowance of fully 1 ounce of cowpeas and of approximately 2 ounces of unbolted maize meal (as corn bread). Between August 13 and October 9 the consumption of cowpeas was reduced to a little under one-half ounce (approximately 10 or 11 grams) daily, but that of maize meal was increased to between 3 and 4 ounces a day.

During the period June 3 to October 9, 1921, the daily consumption of the mineral supplement was not complete, but is estimated to have equaled fully 80 per cent of that offered.

So far as can be judged, the shifts in food consumption noted would hardly seem to have effected any change in the quantity of vitamine B intake, the reduced consumption of cowpeas being probably fully compensated for by the increased consumption of maize meal. The reduced mineral intake would still, we should judge, furnish plenty of the elements sodium, chlorine, and calcium. In spite of all this, however, a pellagrous dermatitis made its appearance about October 10, 1921.

Case 10. N-M: Colored female, age 41, weight 41 kilograms. So far as known had her first attack of pellagra in July, 1920. She was free from active symptoms of pellagra on December 14, when she began taking the mineral supplement. Like Case 9, on January 26, she began receiving two drops of the sirup of the iodid of iron, and on May 24, one-half ounce of cod-liver oil and 3 ounces of tomato juice daily.

Between June 3 and August 13 she consumed daily as part of her diet an average of a little short of 1 ounce of cowpeas (about 25

grams) and upward of $1\frac{1}{2}$ ounces of unbolted maize meal (as corn bread). After August 13 and up to September 20 the consumption of cowpeas was reduced to a daily average of slightly under one-half ounce (about 12 grams), but that of maize meal was increased to a daily average of between 3 and 4 ounces.

Between June 3 and September 20 her food consumption was such that her intake of calcium is estimated to have been fully 90 per cent of that offered.

It would appear that in this as in Case 9, the variation in appetite did not materially affect the intake of vitamine B and, since the cod-liver oil and tomato juice were regularly administered apart from the other food and always completely ingested, the intake of the other vitamins was not at all affected. With respect to the mineral elements of special interest (calcium, sodium, and chlorine), the slight reduction of intake, considering the liberal supply may, we judge, be regarded as negligible. Notwithstanding all this, however, a classical pellagrous dermatitis began its development on September 22.

SIGNIFICANCE OF OBSERVATIONS IN PRESENT STUDY.

It will doubtless have been noted that in all the cases cited the individuals attacked had had one or more previous attacks of the disease. This was not an accidental circumstance. In selecting individuals for observation and study, we purposely chose those who had had previous attacks, in the belief that in a group so chosen there would be a greater chance of the development of cases than in a group of individuals not previously attacked, and therefore the failure of such development would be all the more significant of the value of the preventive measures being tested. For, although a pellagra recurrence must be regarded as etiologically fundamentally identical with an initial attack (14), there are nevertheless certain intrinsic factors which, exposure being equal, may conceivably operate to make more probable that a pellagrin will suffer a recurrence than that a non-pellagrin will develop an initial attack. Of these factors, three may be cited in the present connection.

There is, first of all, the possibility that some of those who have suffered an attack of the disease have not, by reason perhaps of inadequate treatment, fully recovered their normal nutritional status. For such, it may be assumed that the minimum supply of essential food factors must be greater than for the average normal individual since, conceivably, there is not only the need for taking care of current requirements, but also for the repair or correction of residual morbid processes or changes and, perhaps, also to satisfy a residual shortage of some essential nutritional elements.

There is next the probability that some, if not all, such individuals have suffered some (possibly permanent) damage to the digestive organs and glands which may conceivably lead to a lowering of efficiency or to an unfavorable modification of the digestive processes and thus to an inferior utilization of some of the ingested nutrients. It is known, in fact, that gastric anacidity is a frequent sequel of the disease and this, as both Murlin (64) and Wilson (39) suggest, probably explains the tendency in convalescents for intestinal putrefaction to take place high up in the intestines (65, 66) with the production of waste products, manifested by the appearance of an excess of hippuric acid and of indican in the urine. While this disturbed digestion may, as Wilson further points out, lead to serious loss of protein and, possibly of a little fat, it should perhaps be observed that it is not known that any other food factors are materially affected nor that the processes of absorption are appreciably interfered with.

Finally we have the possibility if not the probability that the pellagrin may be an individual whose minimum physiological requirements are normally somewhat above the average.

The circumstance, therefore, that our observations were in individuals with histories of one or several previous attacks and thus probably with requirements for a supply of nutrient factors in some measure above the normal average, makes it more than ordinarily important that in evaluating the significance of these observations due consideration be given to the question of the adequacy of supply of the dietary factors the rôle of which in pellagra prevention we are seeking to determine.

Mineral supplement.—It has already been pointed out that by reason of the nature of the shortcomings, with respect to the mineral element, of the type of diet provided the asylum inmates, the mineral supplement furnished by us coupled with the table salt used in the preparation of the several dishes, would, with reasonable certainty, not only correct such possible shortcomings but also provide a large margin of safety. So far as existing knowledge permits one to judge, both the total quantity and the composition of the mineral consumed may properly be regarded as having been fully adequate for the needs of the individuals concerned. Therefore the failure of our mineral addition to prevent the occurrence of the disease in the cases cited would seem quite clearly to indicate that a mineral deficiency is not an essential factor in the production of the disease. This interpretation is materially strengthened by the fact that lean meat, known to be poor in ash, is a valuable preventive of the disease. Indeed our experience leads us to believe that on the basis of protein, fresh lean beef is, gram for gram, at least as efficient a prophylactic as is milk, a food exceptionally rich in minerals.

Vitamines with minerals.—The failure of our attempt to prevent pellagra by supplementing the institution diet with mineral elements which, it seems safe to assume, made good the shortcomings of the ash constituents of the diet, is significant, however, not only in relation to the mineral factor itself but also as relates to a combination of this with the known vitamins.

In the large section of the asylum (colored females) under our observation, we have found symptoms of scurvy and of beriberi of such very exceptional occurrence as to leave no room for doubt that the institution diet provides at least the minimum requirement of the essential antiscorbutic and antineuritic vitamins. Similarly, although inflammatory conditions of the eye occur from time to time among the asylum inmates, we have at no time observed among them any condition which did not respond quite readily to mild local antiseptics, a response which, it is believed, would not have occurred in cases of ophthalmia the result of a vitamin-A deficiency. Therefore, if this form of ophthalmia has occurred among the inmates under our observation such cases must, we feel, have been both rare and very mild, for, although on the alert, we have recognized none. This suggests that the asylum diet contains, in general, sufficient vitamin-A to prevent the development of this specific eye disease.

In the light of these considerations it would seem to follow that cases 1-5, above cited, developed in spite, not only of what, we believe, may properly be regarded as a liberal mineral intake (supplement of minerals plus minerals in institution diet), but also in spite of an intake at the same time of each of the three known vitamins included in the institution diet, an intake which, if not liberal, would seem, in general, to be at least adequate to prevent recognizable symptoms of a specific deficiency.

Recalling what has already been said of the richness in vitamins A, B, and C of canned tomato juice, and in vitamin A and the antirachitic factor of cod liver oil, and taking into account also the fact that both dry cowpeas and unbolted maize meal are good sources of vitamin B (51, 52), it would seem that the modifications of the institution diet, already referred to, as the result of which these vitamin-bearing foods were regularly included in the daily ration, very greatly improved it in all these respects. If, as we believe, the institution diet, in general, supplies at least the minimum needs of each of the three known vitamins, the diet modified and supplemented, as described, may reasonably, we believe, be regarded as supplying them in fully adequate quantities even for individuals of the type with which we were dealing.

Therefore the development of recurrences in five individuals (cases No. 6, 7, 8, 9, and 10), each of whom had, as already detailed, con-

sumed daily for periods of at least two and one-half months before the appearance of the eruption not only what we believe to have been an adequate mineral supplement but also what we judge to have been an abundance of all known vitamins, would seem to indicate that a deficiency of these dietary factors, individually and collectively, is not essential in the causation of the disease.

The development during the past few years in our knowledge of nutrition seems to warrant the belief that besides an adequate energy supply the following dietary factors are essential for normal physiological well being: An adequate quota of protein of good biological quality; a suitable mineral supply; a sufficient supply of vitamins, A, B, and C, and, possibly, of an as yet not definitely identified antirachitic factor.

With regard to energy supply we estimate that the food actually consumed yielded an average of approximately 1,800 calories¹ daily. Considering the mild climate, the small size and inactive habit of the patients concerned, this should have fully supplied their energy needs. The cases of pellagra under consideration would seem to have occurred therefore in spite not only of a liberal intake of essential minerals and vitamins but also of an adequate energy supply.

Thus, by a process of exclusion we are led to conclude that of the known dietary essentials the protein factor alone was concerned in our failure to prevent the development of the cases herein cited. And if our interpretations are, as we believe, sound (and if all dietary factors essential in human nutrition are known) the further conclusion may properly be drawn, namely, that the dominating rôle of diet in the prevention and causation of pellagra must be referred primarily to the character of the protein supply.

The distinctive clinical physiognomy of the disease precludes the assumption of any but a specific etiology; it must be assumed, therefore, that the essential etiological dietary factor is a specific defect in the protein mixture or, since protein is but a complex of amino-acids, different for different proteins, that it is a specific defect in the amino-acid supply either in the nature of an improper balance or more probably of a deficiency of some one or of some combination or combinations of amino-acids. This does not mean and we do not wish to be understood as suggesting that the diet associated with the production of pellagra is always complete with respect to all but the specific amino-acid factor. On the contrary, there is reason to believe that such diets may, and probably frequently, have other more or less serious shortcomings which may operate as accessory etiological factors and thus perhaps account for some of the "Protean" clinical manifestations of the disease.

¹ In computing the caloric value the factor 4 was applied to protein and carbohydrate, and the factor 9 to fat. This therefore represents the available, not the gross, energy.

In 1918 Goldberger and Wheeler (43) gave expression to the opinion that as conventionally defined pellagra not improbably includes at least two commonly associated but etiologically distinct though fundamentally closely related syndromes, namely, (1) the syndrome comprehended by the phrase "pellagra sine pellagra," and (2) the dermal complex or pellagra without or with only slight subjective manifestations. While according to this idea, both syndromes are dependent primarily on a faulty diet, the first is to be regarded as the expression of a nutritive or metabolic failure, not in all respects peculiar to pellagra, whereas the second is to be considered as a reaction to a toxic substance or substances of a fairly specific type. Furthermore the initial appearance of the eruption on the genitalia in each of the cases with eruption occurring in their feeding experiment in convicts (21) suggested to Goldberger and Wheeler that the initial site of the eruption must be looked upon as a specific reaction, direct or indirect, to some special factor or combination of factors in the diet.

Our experience at this asylum lends support to the distinctions suggested by Goldberger and Wheeler. We have seen cases in female inmates in which, clinically, there was appreciable nothing but a well-marked dermatitis. Indeed, in one such instance there was, during the period immediately preceding the appearance of the erythema, a slight but steady gain in weight. Our observations here have also strongly impressed us with the idea that there is, as Goldberger and Wheeler suggest, some correlation between the type of diet and the site of the initial localization of the eruption.

It is of interest to note that this differentiation into a constitutional and a dermal type gains some support also from the study of the metabolism by Sullivan, Stanton, and Dawson (67), who found greater abnormality in the urinary findings in the systemic than in the dermal type of the disease.

With these considerations in mind we would suggest that with the conception of a specific amino-acid deficiency as the primary etiological factor should be coupled the idea that the character of the deficiency (the precise amino-acid combination) may vary within certain, probably narrow, limits. Hence it would seem permissible to conclude that the deficiency etiologically related to pellagra is probably some special combination or, within narrow limits, special combinations of amino-acids.

In this connection it should be pointed out that the possibility that some as yet unknown dietary essential, either alone or in combination with the protein factor, plays the dominating rôle in this disease, while perhaps very remote, is not excluded, and should, therefore, not be wholly disregarded.

In closing this section we should perhaps make clear that in dealing with the etiology of the disease we have intentionally centered our attention on those extrinsic factors which we believe to be essential to the production of the disease in the average normal individual. In doing so we have not been unmindful of the possibility that other, both extrinsic and intrinsic, factors may operate either to accelerate or to retard the development of the disease or of some of its distinctive manifestations. We have confined ourselves to a consideration of primary essential factors in the belief that progress in unraveling the complex problem of etiology could best be made by determining the fundamental essentials before dealing with accessory factors, however important these may be in certain individuals or special groups.

DISCUSSION.

It is of interest to note at the outset that the conclusion suggested by the observations herein reported, namely, that the primary etiological factor in pellagra is a specific defect in the amino-acid supply, probably of the nature of a deficiency, is in harmony with the other previously reported results of the series of studies of which the present is a part. These had in succession permitted the exclusion of one known vitamine after the other as an essential etiological factor (44); but not until the present observations were made did it seem permissible to exclude not only each of them individually but all of them together and with them, also, the mineral element as essential factors.

Most, if not all of the older dietary theories (zeist and antizeist), some of them seemingly very discordant, can, we believe, be harmonized on the basis of an amino-acid deficiency.

Of the newer viewpoints, that first suggested by Funk gains no support from our work; although, as we have already indicated, it is quite possible that a low or inadequate intake of any or all of the known vitamins or other food factors may play a more or less important accessory rôle.

On the surface there may seem to be a lack of harmony in our results with those of Voegtlin, Neil, and Hunter (34), who, as we noted in reviewing the literature, report observing very favorable therapeutic results following the administration of liver and thymus extracts containing both the antineuritic and the fat-soluble vitamine. Since these extracts are also reported to have contained unidentified amino-acids, the possibility is present that the beneficial effects noted are primarily attributable to these protein-building stones rather than to the contained vitamins. It should perhaps be recalled that these workers themselves did not attribute the favorable effects exclusively to the vitamins.

Our conclusions are in substantial agreement with those reached by Wilson. However, his use of Thomas's figures to appraise the biological value of a protein mixture, although in general, perhaps, very useful, seems to us to have the serious drawback, so far as pellagra is concerned, that a low biological protein value (so appraised) is not, in our view, necessarily indicative of a pellagra-producing defect. Since, as has already been pointed out, it must be assumed that the fault in the amino-acid complex related to pellagra is a specific one, it follows that individuals may conceivably subsist on diets faulty with respect to the protein mixture in other than this specific respect and not develop pellagra. Thus a pellagra-producing protein mixture may, according to Wilson's method of appraisal, always be of low biological value; but a protein of low biological value, so determined, may, we believe, not only not be pellagra-producing but actually be pellagra-preventing, so far, at least, as the distinctive dermatitis is concerned.

We think it important to keep this distinction in mind. It will aid in minimizing some of the perplexity and confusion of thought evidenced from time to time in discussions of the etiology of the disease. It may help to explain why the people of the Central Powers, during the war and since, though living on presumably faulty, perhaps, starvation diets, and suffering severely from malnutrition, have remained practically free from pellagra.

Some of the perplexity and confusion will also be prevented if it is not forgotten that the biological quality of a protein and its adequacy in relation to pellagra may, and doubtless frequently do, depend on the plane of intake. In our experience, a supplement of not over 40 grams of milk or beef proteins will, for practically all normal individuals, adequately supplement a pellagra-producing mixture of proteins from maize, wheat, rice, and cowpeas, but 20 grams (representing somewhat over a pint of milk or a quarter of a pound of round steak) may not do so. Thus it does not suffice merely to include milk or meat in a diet to prevent pellagra; the quantity of either of these or of other like foods alone or as supplements must be considerable to be effective. This may help to explain some of the instances of pellagra in individuals (including some of those very rare ones in nursing infants) who are alleged to have had a "good" diet. They did not consume enough for their particular needs.

It is readily understandable that the necessary minimum of a protein or mixture of proteins will, so far as pellagra is concerned (other things being equal), depend on its amino-acid make up. Unfortunately our knowledge of the latter is so meager that judgment must, for the present, be very tentative. Wilson (39), judging by the biological value of the protein as appraised on the basis of Thomas's figures—the amount available for assimilation, not the gross amount,

being considered—suggests 40 as the minimum safe value for this factor. On the basis of practical experience, Goldberger (68) has tentatively suggested that for preventive purposes the diet should include a minimum of approximately 40 grams of animal protein (milk, cheese, meat, eggs) per day. This is a higher figure than Wilson's (if estimated by his method) and is higher than is needed by the average normal individual, but is not, we believe, too high when all types of individuals are considered.

For the purposes of treatment, the primary lesson to be drawn from this study is the need for emphasis on the protein factor. From the time of Casal, clinicians have repeatedly emphasized the importance of a "nutritious" diet, particularly one rich in animal foods, in the treatment of the disease. But notwithstanding Roussel's emphatic affirmation over half a century ago, that without diet all remedies fail, the full significance of a proper diet as the specific treatment is but just coming to be realized. Prevailing opinion, at least up to within three or four years ago, was probably accurately expressed by Dyer (49) when he said: "We are emphatic in the belief that most cases of pellagra will get well under medication, irrespective of diet." In consequence, medicinal specifics were sought for, and arsenic, atoxyl, arsphenamine, quinine hydrobromate, etc., were, from time to time, proposed as having virtues but little short of those of a specific remedy. Nor could the full significance of diet be justly appreciated until Goldberger, Waring, and Willets, in 1915, for the first time convincingly showed that pellagra was completely preventable by diet without intervention of any other factor, hygienic or sanitary. This demonstration went far toward proving that diet is the primary controlling factor in the prevention and causation of the disease and thus pointed towards a proper diet as containing within itself the specific remedy for the disease.

With the search for the primary etiological factor narrowed down to a faulty amino-acid supply, we may expect, when the precise amino-acid defect is finally determined, that the specific remedy for the disease will at the same time have been found.

With this double end in view, we have made some tentative therapeutic tests with certain amino acids. These tests have not as yet been extensive enough to warrant any conclusions. We may say, however, that in two cases the dermal lesions seemed to show a markedly favorable response to cystine, and in a third the administration of a daily dose of one gram of cystine and two grams of tryptophane during a period of 31 days (the diet remaining unaltered), was accompanied by a weekly gain in weight and a slight improvement in diarrhea.

We hope to continue this line of study; but it seems wise to report these preliminary results, such as they are, in the hope that clinicians

may be led to try cystine and tryptophane in the treatment of suitable cases, and thus aid in the determination of their value therapeutically and of their significance etiologically.

Summary.

The more important part of the evidence proving diet to be the primary controlling factor in the prevention and causation of pellagra is briefly summarized.

Cases of pellagra are reported that were observed to occur in individuals who were known to have consumed daily, during period of not less than two and one-half months immediately before the onset of the distinctive eruption, what is judged to have been a liberal supply of mineral elements and the known vitamins, which would indicate that a deficiency of these dietary factors is not essential in the causation of the disease.

These factors having thus been excluded, the dominating rôle of diet in the prevention and causation of pellagra must be referred primarily to the character of the protein (amino-acid) supply, this being the only other dietary factor at present known to be necessary to physiological well-being.

On the assumption that all the dietary factors essential in human nutrition are known, it may be concluded that the essential etiological dietary factor is a specific defect in the amino-acid supply, probably in the nature of a deficiency of some special combination or combinations of amino acids.

There is reason to believe that besides the specific amino-acid defect, pellagra-producing diets may and probably frequently have other more or less serious faults, including nonspecific amino-acid deficiencies which may operate as accessory etiological factors.

In some preliminary therapeutic trials with amino-acids the dermal lesions in each of two cases seemed to show a markedly favorable reaction to cystine; and in a third case a steady gain in weight, with some improvement in diarrhea, accompanied the administration of both cystine and tryptophane.

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SMALLPOX OUTBREAK AT POTEAU, OKLA.

The following account of an outbreak of smallpox at Poteau, Okla., is furnished by an officer of the Public Health Service who cooperated with officers of the State board of health in combating the spread of the disease at that place.

On December 5, 1921, a prisoner in the county jail at Poteau was taken sick. The man had been in Kansas City, Mo., from November 16-27, during which time an epidemic of smallpox of the virulent type was present in that city. On December 6 the prisoner expressed his belief that he "was getting smallpox," when he was visited by the jail physician. On December 9 the eruption appeared. The disease was of the discrete type, with a few confluent patches. The patient recovered. He had been successfully vaccinated 44 years previously.

The above case was reported to the city health officer December 18, and some quarantine measures were taken. In the meantime the patient had been in contact with about 30 other prisoners and with the county officers. On December 19 some of the other prisoners who desired it were vaccinated. From December 21, 1921, to January 5, 1922, 18 secondary cases appeared among the prisoners. Nine of these died during the period January 3-13, inclusive. Every prisoner in the jail who had not been vaccinated contracted the disease. Ten prisoners who had been successfully vaccinated within the three preceding years (while in the Army) did not contract the disease, although they were in intimate contact with virulent cases.

On January 5, 1922, five prisoners broke jail and were not apprehended. One was reported to have died in Alabama.

In addition to the cases occurring in jail, 19 cases occurred outside—14 in Poteau and five elsewhere in the county. Of the 14 cases in Poteau, 12 died during the period January 1–18. Of the five cases in outside districts, three died. Vaccination histories of the fatal cases were not obtained. Two cases of varioloid occurred in persons who had been successfully vaccinated December 28, 1921—18 days prior to the appearance of the eruption.

From the original source of infection at the county jail, there occurred 38 cases—four hemorrhagic, two discrete, and 32 confluent in type. There were 24 deaths.

Dr. A. R. Lewis, State health commissioner, and Dr. George Hunter assumed charge of the epidemic January 15 and immediately instituted control measures. Persons who refused to be vaccinated were placed under quarantine. The small towns around Poteau and the neighboring sections of Arkansas enforced strict quarantine against Poteau and in some cases an absolute quarantine against all traffic. It was reported that some towns in Arkansas enforced effective quarantine against persons coming from any place in Oklahoma.

The last severe case of smallpox was quarantined January 5, 1922.

The epidemiological data presented in this report serve to emphasize the value of prompt reporting of cases on the part of physicians and of alertness and vigor on the part of health departments in instituting prompt control measures.

DEATH RATE IN EVERY AGE GROUP LOWER IN 1920 THAN IN 1910.

The Department of Commerce, through the Bureau of the Census, has issued a statement showing deaths and death rates by age groups from different causes in 1910 and in 1920. In every age group the death rate was lower in 1920 than in 1910, the most pronounced change appearing in the rate for infants under 1 year of age, which declined from 13,084 per 100,000 in 1910 to 9,660 per 100,000 in 1920, a decline of about 26 per cent. The death rate for old people above 75 years of age shows a decrease of about 6 per cent, being 13,490 per 100,000 in 1920 as against 14,360 per 100,000 in 1910. In 1910 the death rate for infants was almost as high as it was for old people above 75 years of age, but in 1920 the infantile death rate was only about three-fourths as great as the death rate in old age. Particularly noteworthy is the decrease from 2,581 to 2,280 per 100,000 population in the age group 45 to 74, a decrease of 12 per cent,

due largely to much lower rates from tuberculosis, acute nephritis, and Bright's disease, organic diseases of the heart, accidents, and typhoid fever.

The general death rate from tuberculosis has decreased in the decade from 160 per 100,000 population to 114. The rate from acute nephritis and Bright's disease has decreased from 99 to 89. The rate from accidents has decreased from 84 to 71, and the rate from typhoid fever from 24 to 8.

On the other hand, increases in the rate from influenza, cancer, and puerperal causes clearly show some of the danger spots.

Deaths and death rates in the registration area: 1910 and 1920.

DEATHS.

Cause of death and year.	Deaths at age of—						
	All ages.	Under 1 year.	1 to 14 years.	15 to 44 years.	45 to 74 years.	1 to 74 years.	75 years and over.
All deaths:							
1920.....	1,142,558	174,710	120,223	275,153	401,455	796,831	171,017
1910.....	805,412	151,373	92,625	186,883	266,491	545,999	105,010
Tuberculosis (all forms):							
1920.....	90,916	2,012	7,307	63,345	25,325	95,977	1,927
1910.....	86,309	2,416	6,774	55,132	20,662	82,568	1,325
Influenza:							
1920.....	62,097	5,633	9,867	28,860	13,728	52,455	4,009
1910.....	7,774	522	578	1,003	3,216	4,797	2,455
Pneumonia (all forms):							
1920.....	120,108	22,642	10,193	33,257	32,017	84,467	12,999
1910.....	79,524	19,036	15,153	13,628	22,903	51,774	8,714
Organic diseases of the heart:							
1920.....	124,143	621	2,818	15,081	68,124	86,023	37,409
1910.....	76,178	925	2,138	11,784	42,805	56,727	18,526
Acute nephritis and Bright's disease:							
1920.....	78,192	576	1,769	10,445	45,084	57,298	20,318
1910.....	53,330	706	1,659	10,522	30,895	43,076	9,548
Accidents:							
1920.....	62,492	2,007	14,082	23,898	16,297	54,277	6,208
1910.....	45,416	1,376	7,405	21,019	12,053	40,477	3,563
Cancer (all forms):							
1920.....	72,931	61	504	9,624	51,323	61,451	11,419
1910.....	41,039	38	301	6,147	28,950	35,398	5,603
Typhoid fever:							
1920.....	6,805	53	1,584	3,981	1,135	6,700	52
1910.....	12,673	72	2,094	8,381	2,027	12,502	99
Puerperal causes (total):							
1920.....	16,776	.....	49	16,526	201	16,776	.....
1910.....	8,455	.....	11	8,370	74	8,455	.....
Puerperal septicemia:							
1920.....	5,800	.....	15	5,719	66	5,800	.....
1910.....	3,802	.....	4	3,862	26	3,802	.....
All other causes:							
1920.....	493,298	141,105	63,035	64,417	148,155	275,607	76,586
1910.....	390,822	129,282	56,508	47,035	102,790	206,333	55,207

Deaths and death rates in the registration area: 1910 and 1920—Continued.

DEATH RATES.

Cause of death and year.	Death rate per 100,000 population at age of—						
	All ages.	Under 1 year.	1 to 14 years.	15 to 44 years.	45 to 74 years.	1 to 74 years.	75 years and over.
All deaths:							
1920.....	1,306.0	9,660.4	480.1	658.8	2,280.2	944.0	13,489.5
1910.....	1,496.2	13,083.5	636.4	691.1	2,581.3	1,051.6	14,359.7
Tuberculosis (all forms):							
1920.....	114.2	111.3	29.2	151.7	143.8	113.7	152.0
1910.....	160.3	204.8	46.5	203.9	200.1	159.0	181.1
Influenza:							
1920.....	71.0	311.5	39.4	69.1	78.0	62.1	316.2
1910.....	14.4	44.2	4.0	3.7	31.2	9.2	335.6
Pneumonia (all forms):							
1920.....	137.3	1,252.0	76.7	79.6	181.9	100.1	1,025.3
1910.....	147.7	1,613.4	104.1	50.4	222.7	99.7	1,191.3
Organic diseases of the heart:							
1920.....	141.9	34.3	11.3	36.1	386.9	101.9	2,957.8
1910.....	141.5	78.4	14.7	43.6	414.6	109.3	2,532.6
Acute nephritis and Bright's disease:							
1920.....	89.4	31.8	7.1	25.0	256.1	67.9	1,602.6
1910.....	99.1	59.8	11.4	38.9	299.3	83.0	1,305.3
Accidents:							
1920.....	71.4	111.0	56.2	57.3	92.6	64.3	489.7
1910.....	84.4	116.6	50.9	77.7	116.7	78.0	487.1
Cancer (all forms):							
1920.....	83.4	3.4	2.0	23.0	291.5	72.8	900.7
1910.....	76.2	3.2	2.1	22.7	280.4	68.2	766.0
Typhoid fever:							
1920.....	7.8	2.9	6.3	9.5	6.4	7.9	4.1
1910.....	23.5	6.1	14.4	31.0	19.6	24.1	13.5
Puerperal causes (total):							
1920.....	19.2	.....	0.2	39.6	1.1	19.9	.....
1910.....	15.7	.....	0.1	31.0	0.7	16.3	.....
Puerperal septicemia:							
1920.....	6.6	.....	0.1	13.7	0.4	6.9	.....
1910.....	7.2	.....	0.0	14.3	0.3	7.5	.....
All other causes:							
1920.....	563.9	7,802.2	251.7	154.2	841.5	326.5	6,040.9
1910.....	726.0	10,957.0	388.3	173.9	995.6	397.4	7,547.2

DIVISION OF VENEREAL DISEASES, OCTOBER, NOVEMBER, AND DECEMBER, 1921.

During the months of October, November, and December, 1921, 80,140 cases of venereal diseases were reported to the State boards of health, and 35,681 new cases were admitted to the venereal-disease clinics.

Veneral-disease reports for October, November, and December, 1921.—Number of cases reported by the State boards of health, number of admissions to the veneral-disease clinics operating under joint control of the United States Public Health Service and the State boards of health, and number of treatments of arsphenamine administered.

State.	Cases reported.				Admissions to clinics.				Arsphenamine treatments administered.
	Total cases.	Syphilis.	Gonorrhea.	Chancroid.	Total admissions.	Syphilis.	Gonorrhea.	Chancroid.	
Alabama.....	344	107	215	22	4,171	2,611	1,444	116	12,068
Arizona.....	55	25	28	2					
Arkansas.....	3,542	1,974	1,525	43	919	644	266	9	2,270
California ¹	844	265	540	39	337	155	174	8	1,261
Colorado.....	558	402	156		188	86	97	5	765
Connecticut.....	224	91	110	23	61	23	36	2	137
Delaware.....					73	52	21		268
District of Columbia.....	1,088	568	447	73	956	686	229	41	2,727
Florida.....	2,112	1,103	930	79	1,081	543	471	67	3,891
Georgia.....	64	22	42						
Idaho.....	4,846	1,964	2,813	69	2,297	1,025	1,205	67	6,255
Illinois.....	1,373	729	616	28	1,399	594	758	47	5,740
Indiana.....	843	273	551	19	405	221	184		2,143
Iowa.....	682	357	320	5	444	262	180	2	1,606
Kansas.....	7,613	5,032	2,475	106	1,043	604	411	28	4,267
Kentucky.....	1,861	854	843	164	964	503	393	68	3,500
Louisiana.....	324	127	196	1	115	89	25	1	382
Maine.....	493	265	212	16	667	208	432	27	2,334
Maryland.....	1,861	595	1,266		1,517	818	692	7	9,235
Massachusetts.....	3,891	1,721	2,141	29	1,625	815	802	8	4,836
Michigan.....	2,724	1,138	1,553	33	254	114	138	2	1,634
Minnesota.....	738	414	277	47	616	383	193	40	1,618
Mississippi.....	2,597	969	1,407	221	2,248	902	1,212	134	3,834
Missouri.....	232	104	128	4	4	3	1		45
Montana.....	1,368	419	875	74	431	179	214	38	1,572
Nebraska.....									
Nevada ¹	235	107	126	2	88	48	39		604
New Hampshire.....	1,484	797	659	28	1,022	521	485	16	3,156
New Jersey.....	138	36	101	1	13	7	6		73
New Mexico.....	3,280	2,328	952		1,176	674	491	11	7,245
New York.....	1,570	644	873	63	383	212	147	24	1,517
North Carolina.....	205	58	142	5	28	13	14	1	241
North Dakota.....	2,069	1,200	831	38	2,664	1,466	1,049	149	6,781
Ohio.....	550	296	254	30	228	144	75	9	1,273
Oklahoma.....	240	44	189	7	122	76	46		106
Oregon.....	1,200	641	540	19	1,270	668	582	20	5,435
Pennsylvania.....	2,935	1,925	1,006	4	246	131	115		1,745
Rhode Island.....	1,871	751	988	132	1,604	642	828	134	6,546
South Carolina.....	280	112	164	4	20	8	11	1	44
South Dakota.....	1,604	823	693	88	1,202	681	430	91	5,118
Tennessee.....	16,140	6,707	8,629	804	2,003	1,014	769	220	4,442
Texas.....	142	39	96	7	73	31	41	1	126
Utah.....	218	94	124		27	16	10		367
Vermont.....	1,135	582	517	56	1,054	597	393	64	4,098
Virginia.....					259	119	138	2	1,079
Washington.....	2,698	1,520	1,083	93	148	121	27		823
West Virginia.....	1,704	883	819	2	223	78	144	1	1,484
Wisconsin.....	145	55	85	5	13	9	4		38
Wyoming.....									
Total.....	80,140	39,139	38,539	2,471	35,681	18,796	15,422	1,463	124,029

¹ No reports received.

DEATHS DURING WEEK ENDED FEB. 18, 1922.

Summary of information received by telegraph from industrial insurance companies for week ended Feb. 18, 1922, and corresponding week, 1921. (From the Weekly Health Index, Feb. 21, 1922, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Feb. 18, 1922.	Corresponding week, 1921.
Policies in force.....	48,386,013	45,450,654
Number of death claims.....	8,862	9,133
Death claims per 1,000 policies in force, annual rate.....	9.6	10.5

Deaths from all causes in certain large cities of the United States during the week ended Feb. 18, 1922, infant mortality, annual death rate, and comparison with corresponding week of 1921. (From the Weekly Health Index, Feb. 21, 1922, issued by the Bureau of the Census, Department of Commerce.)

City.	Estimated population July 1, 1921.	Week ended Feb. 18, 1922.		Annual death rate per 1,000, corresponding week, 1921.	Deaths under 1 year.		Infant mortality rate, week ended Feb. 18, 1922. ³
		Total deaths.	Death rate. ¹		Week ended Feb. 18, 1922.	Corresponding week, 1921.	
Total.....	27,306,535	8,596	16.4	13.8	1,110	1,100	.....
Akron, Ohio.....	208,435	29	7.3	5.7	7	3	74
Albany, N. Y.....	115,071	51	23.1	16.3	7	2	157
Atlanta, Ga.....	207,473	77	19.4	14.6	11	4	.....
Baltimore, Md.....	750,864	257	17.8	16.5	33	40	93
Birmingham, Ala.....	186,133	48	13.4	17.4	9	7	.....
Boston, Mass.....	757,634	245	16.9	15.3	36	35	96
Bridgeport, Conn.....	143,555	35	12.7	9.0	4	3	50
Buffalo, N. Y.....	519,608	131	13.1	15.6	28	35	110
Cambridge, Mass.....	110,444	33	15.6	19.8	4	7	73
Camden, N. J.....	119,672	21	9.2	18.3	4	9	61
Chicago, Ill.....	2,780,655	653	12.2	12.2	91	113	.....
Cincinnati, Ohio.....	403,418	170	22.0	13.2	7	11	47
Cleveland, Ohio.....	831,138	191	12.0	13.4	32	34	83
Columbus, Ohio.....	245,358	78	16.6	12.8	9	7	95
Dallas, Texas.....	165,282	46	14.5	11.0	6	4	.....
Dayton, Ohio.....	152,559	32	10.9	8.9	4	5	68
Denver, Colo.....	263,152	80	15.9	16.1	6	14	.....
Detroit, Mich.....	1,070,450	243	11.8	10.6	57	60	110
Fall River, Mass.....	120,668	29	12.5	17.3	10	12	140
Fort Worth, Texas.....	111,423	29	13.6	.....	6	.....	.....
Grand Rapids, Mich.....	141,197	39	14.4	12.9	3	6	50
Houston, Tex.....	144,340	32	11.6	10.5	4	1	.....
Indianapolis, Ind.....	325,632	141	22.6	13.5	18	16	137
Jersey City, N. J.....	302,788	92	15.8	15.2	14	17	89
Kansas City, Kans.....	103,884	47	23.6	14.1	4	3	92
Kansas City, Mo.....	336,157	138	21.4	14.9	26	6	.....
Los Angeles, Calif.....	614,160	212	18.0	14.7	16	9	66
Louisville, Ky.....	236,083	91	20.1	15.5	5	8	54
Lowell, Mass.....	113,757	45	20.6	15.6	10	7	168
Memphis, Tenn.....	165,656	69	21.7	11.3	16	2	.....
Milwaukee, Wis.....	468,385	100	11.1	11.5	20	22	98
Minneapolis, Minn.....	392,815	93	12.3	13.7	15	16	82
Nashville, Tenn.....	122,036	40	17.1	17.9	5	5	.....
New Bedford, Mass.....	125,012	45	18.8	9.6	9	3	134
New Haven, Conn.....	167,007	67	20.9	11.2	9	8	110
New Orleans, La.....	394,657	145	19.2	17.8	19	20	.....
New York, N. Y.....	5,751,867	1,981	18.0	13.6	247	224	96
Newark, N. J.....	424,885	159	19.5	12.6	24	19	106
Norfolk, Va.....	121,260	26	11.2	19.4	3	9	53
Oakland, Calif.....	226,472	69	15.9	10.1	5	5	63
Omaha, Nebr.....	197,066	69	18.3	17.2	15	9	161
Paterson, N. J.....	137,463	51	19.3	18.6	6	9	92
Philadelphia, Pa.....	1,866,212	584	16.3	15.9	72	77	85
Pittsburgh, Pa.....	602,452	284	24.6	10.7	27	18	80
Portland, Oreg.....	264,859	72	14.2	11.2	1	9	10
Providence, R. I.....	239,645	88	19.1	14.8	13	15	103
Richmond, Va.....	175,686	66	19.6	16.3	3	8	37
Rochester, N. Y.....	305,229	72	12.3	10.4	8	10	62
St. Louis, Mo.....	786,164	255	16.9	14.8	21	31	.....
St. Paul, Minn.....	237,781	56	12.3	14.7	6	8	56
Salt Lake City, Utah.....	121,595	30	12.9	12.4	5	5	75
San Francisco, Calif.....	520,546	225	22.5	18.5	20	13	115
Seattle, Wash.....	315,312	112	18.5	9.4	6	7	51
Spokane, Wash.....	104,442	43	21.5	14.0	5	2	107
Springfield, Mass.....	135,877	39	15.0	16.1	6	5	89
Toledo, Ohio.....	253,696	73	15.0	11.5	5	8	49
Trenton, N. J.....	122,760	45	19.1	12.7	5	2	77
Washington, D. C.....	437,571	155	18.5	15.8	24	23	138
Wilmington, Del.....	113,408	37	17.0	17.9	3	4	43
Worcester, Mass.....	184,972	55	15.5	13.8	4	13	43
Yonkers, N. Y.....	103,324	44	22.2	14.1	7	6	146
Youngstown, Ohio.....	139,432	32	12.0	11.2	5	7	66

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births—based on deaths under 1 year for the week and estimated births for 1921. Cities left blank are not in the registration area for births.

³ Enumerated population Jan. 1, 1920.

PREVALENCE OF DISEASE.

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.

UNITED STATES.

CURRENT STATE SUMMARIES.

Telegraphic Reports for Week Ended Feb. 25, 1922.

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers.

ALABAMA.		CALIFORNIA—continued.	
	Cases.		Cases.
Chicken pox.....	59	Influenza—Continued.	
Diphtheria.....	18	Los Angeles County.....	400
Hookworm disease.....	17	Oakland.....	237
Influenza.....	20	Pasadena.....	304
Malaria.....	7	San Francisco.....	987
Ophthalmia neonatorum.....	3	Santa Monica.....	209
Pellagra.....	2	Scattering.....	3,457
Pneumonia.....	30	Lethargic encephalitis—Los Angeles.....	2
Scarlet fever.....	5	Measles.....	22
Smallpox.....	34	Poliomyelitis:	
Tuberculosis.....	12	Gilroy.....	1
Typhoid fever.....	12	Roseville.....	1
		Scarlet fever.....	130
		Smallpox:	
		Kern County.....	9
		San Jose.....	8
		Scattering.....	48
		Typhoid fever.....	7
ARKANSAS.		COLORADO.	
		(Exclusive of Denver.)	
Chicken pox.....	22	Cerebrospinal meningitis.....	1
Diphtheria.....	3	Chicken pox.....	5
Influenza.....	202	Diphtheria.....	16
Malaria.....	37	Influenza.....	12
Measles.....	7	Measles.....	1
Pellagra.....	6	Mumps.....	13
Pneumonia.....	4	Pneumonia.....	14
Poliomyelitis.....	1	Scarlet fever.....	27
Scarlet fever.....	3	Septic sore throat.....	1
Smallpox.....	5	Smallpox.....	26
Trachoma.....	1	Tuberculosis.....	20
Tuberculosis.....	7	Typhoid fever.....	3
Typhoid fever.....	1		
Whooping cough.....	8		
CALIFORNIA.		CONNECTICUT.	
Beriberi—San Francisco.....	1	Cerebrospinal meningitis.....	8
Cerebrospinal meningitis:		Chicken pox.....	64
Livermore.....	1		
San Francisco.....	1		
Diphtheria.....	138		
Influenza:			
Alameda.....	110		
Berkeley.....	678		
Los Angeles.....	3,651		

CONNECTICUT—continued.		Cases.
Diphtheria:		
Bridgeport.....	9	
Hartford.....	11	
Scattering.....	34	
German measles.....	2	
Influenza:		
Fairfield County.....	184	
Hartford County.....	213	
Litchfield County.....	25	
Middlesex County.....	85	
New Haven County.....	107	
New London County.....	60	
Tolland County.....	1	
Lethargic encephalitis.....	1	
Measles:		
Bridgeport.....	8	
Groton.....	9	
Hartford.....	73	
New Haven.....	23	
Stamford.....	22	
Scattering.....	37	
Mumps.....	37	
Ophthalmia neonatorum.....	1	
Pneumonia (lobar).....	92	
Poliomylitis.....	3	
Scarlet fever:		
New Haven.....	15	
Stamford.....	10	
Waterbury.....	13	
Scattering.....	66	
Smallpox:		
Bridgeport.....	11	
Scattering.....	2	
Tuberculosis (all forms).....	32	
Whooping cough.....	25	

DELAWARE.

Chicken pox.....	11
Diphtheria.....	1
Influenza.....	9
Malaria.....	1
Measles.....	7
Pneumonia.....	2
Scarlet fever:	
Dover.....	8
Newark.....	8
Wilmington.....	56
Scattering.....	21
Tuberculosis.....	3
Typhoid fever.....	2
Whooping cough.....	1

FLORIDA.

Diphtheria.....	14
Influenza.....	118
Malaria.....	5
Pneumonia.....	17
Scarlet fever.....	2
Smallpox.....	15
Typhoid fever.....	9

GEORGIA.

Chicken pox.....	30
Conjunctivitis (infectious).....	1
Diphtheria.....	18
Dysentery (bacillary).....	1

GEORGIA—continued.		Cases.
Hookworm disease.....	15	
Influenza.....	162	
Malaria.....	9	
Measles.....	16	
Mumps.....	7	
Paratyphoid fever.....	1	
Pneumonia.....	42	
Scarlet fever.....	25	
Septic sore throat.....	6	
Smallpox.....	29	
Tetanus.....	1	
Tuberculosis (pulmonary).....	16	
Typhoid fever.....	10	
Typhus fever.....	1	
Whooping cough.....	21	

ILLINOIS.

Cerebrospinal meningitis:		
Christian County—Locust Township....	1	
East St. Louis.....	1	
Galesburg.....	1	
Macoupin County—Nilwood Township..	1	
Wayne County—Garden Hill Township..	1	
Diphtheria:		
Chicago.....	156	
Scattering.....	120	
Influenza.....	1,069	
Lethargic encephalitis:		
Bush.....	1	
Chicago.....	5	
Cicero.....	1	
Pneumonia.....	611	
Scarlet fever:		
Chicago.....	127	
Du Page County—Lisle Township.....	26	
Evanston.....	10	
Robinson.....	20	
Rockford.....	8	
Scattering.....	158	
Smallpox:		
Jefferson County—Rome Township.....	10	
Marion County—Sandoval Township..	9	
Peoria.....	14	
Williamson County—Southern Township	43	
Scattering.....	40	
Typhoid fever.....	9	
Whooping Cough.....	75	

INDIANA.

Diphtheria.....	46
Rabies in animals—Knox County.....	1
Scarlet fever.....	90
Smallpox.....	33
Typhoid fever.....	5

IOWA.

Diphtheria.....	24
Scarlet fever.....	93
Smallpox.....	34

KANSAS.

Cerebrospinal meningitis.....	2
Chicken pox.....	60
Diphtheria.....	80
German measles.....	3
Influenza.....	901
Lethargic encephalitis.....	1

KANSAS—continued.		MASSACHUSETTS—continued.	
	Cases.		Cases.
Measles.....	5	Trachoma.....	1
Mumps.....	21	Trichinosis.....	1
Pellagra.....	1	Tuberculosis (all forms).....	107
Pneumonia.....	120	Typhoid fever.....	18
Scarlet fever.....	134	Whooping cough.....	84
Smallpox.....	52		
Tuberculosis.....	18	MINNESOTA.	
Typhoid fever.....	2	Cerebrospinal meningitis.....	5
Whooping cough.....	15	Chicken pox.....	14
		Diphtheria.....	36
LOUISIANA.		Influenza.....	44
Diphtheria.....	17	Measles.....	36
Influenza.....	368	Pneumonia.....	7
Poliomyelitis.....	1	Scarlet fever.....	170
Scarlet fever.....	11	Smallpox.....	60
Smallpox.....	47	Tuberculosis.....	57
Typhoid fever.....	15	Typhoid fever.....	4
		Whooping cough.....	3
MAINE.			
Chicken pox.....	18	MISSISSIPPI.	
Diphtheria.....	21	Diphtheria.....	21
German measles.....	1	Scarlet fever.....	3
Influenza.....	441	Smallpox.....	25
Mumps.....	1	Typhoid fever.....	6
Pneumonia.....	24		
Scarlet fever.....	38	MISSOURI.	
Smallpox.....	2	Cerebrospinal meningitis.....	1
Tuberculosis.....	6	Chicken pox.....	65
		Diphtheria.....	98
MARYLAND. ¹		Epidemic sore throat.....	20
Anthrax.....	1	Influenza.....	313
Cerebrospinal meningitis.....	2	Measles.....	3
Chicken pox.....	77	Mumps.....	8
Diphtheria.....	50	Ophthalmia neonatorum.....	1
German measles.....	2	Pneumonia.....	114
Influenza.....	431	Scarlet fever.....	80
Measles.....	186	Smallpox.....	14
Mumps.....	115	Trachoma.....	12
Pneumonia (all forms).....	151	Tuberculosis.....	57
Poliomyelitis.....	2	Typhoid fever.....	6
Scarlet fever.....	122	Whooping cough.....	7
Septic sore throat.....	3		
Trachoma.....	1	MONTANA.	
Tuberculosis.....	40	Cerebrospinal meningitis—Lewistown.....	1
Typhoid fever.....	2	Diphtheria.....	14
Vincent's angina.....	1	Influenza.....	188
Whooping cough.....	26	Scarlet fever.....	32
		Smallpox.....	61
MASSACHUSETTS.			
Cerebrospinal meningitis.....	2	NEBRASKA.	
Chicken pox.....	127	Cerebrospinal meningitis—Merriek County..	1
Conjunctivitis (suppurative).....	8	Chicken pox.....	35
Diphtheria.....	187	Diphtheria:	
Dysentery.....	1	Omaha.....	10
German measles.....	7	Scattering.....	23
Influenza.....	1,285	German measles.....	1
Lethargic encephalitis.....	2	Influenza.....	161
Malaria.....	2	Measles:	
Measles.....	500	Fremont.....	23
Mumps.....	124	Hastings.....	25
Ophthalmia neonatorum.....	19	Omaha.....	28
Pneumonia (lobar).....	283	Scribner.....	11
Poliomyelitis.....	2	Scattering.....	19
Scarlet fever.....	208	Mumps.....	12
Septic sore throat.....	5	Pneumonia.....	10

¹ Week ended Friday.

NEBRASKA—continued.		Cases.	OREGON—continued.		Cases.
Scarlet fever:			Diphtheria:		
Cedar County	.....	14	Portland	.....	17
Hartington	.....	13	Scattering	.....	12
Scattering	.....	63	Influenza	.....	616
Septic sore throat	.....	6	Measles	.....	4
Smallpox:			Mumps	.....	9
Otoe County	.....	14	Pneumonia	.....	18
Scattering	.....	21	Scarlet fever:		
Tuberculosis	.....	1	Portland	.....	11
Whooping cough	.....	2	Scattering	.....	9
			Septic sore throat	.....	1
NEW JERSEY.			Smallpox:		
Cerebrospinal meningitis	.....	3	Portland	.....	26
Chicken pox	.....	161	Tillamook County	.....	8
Diphtheria	.....	107	Scattering	.....	15
Influenza	.....	918	Tuberculosis	.....	18
Measles	.....	236	Typhoid fever	.....	1
Pneumonia	.....	373	Whooping cough	.....	8
Polioomyelitis	.....	2			
Scarlet fever	.....	321	SOUTH DAKOTA.		
Smallpox	.....	2	Diphtheria	.....	8
Trichinosis	.....	26	Measles	.....	1
Typhoid fever	.....	4	Pneumonia	.....	6
Whooping cough	.....	80	Scarlet fever	.....	17
			Smallpox	.....	14
NEW MEXICO.					
Cerebrospinal meningitis	.....	1	TEXAS.		
Chicken pox	.....	18	Diphtheria	.....	21
Diphtheria	.....	16	Influenza	.....	76
Influenza	.....	92	Measles	.....	56
Mumps	.....	16	Pneumonia	.....	30
Pellagra	.....	1	Smallpox	.....	9
Pneumonia	.....	13	Typhoid fever	.....	2
Scarlet fever	.....	8			
Septic sore throat	.....	1	VERMONT.		
Smallpox	.....	3	Chicken pox	.....	51
Tuberculosis	.....	19	Diphtheria	.....	1
Typhoid fever	.....	2	Influenza	.....	1
Whooping cough	.....	6	Measles	.....	10
			Mumps	.....	13
NEW YORK.			Pneumonia	.....	16
(Exclusive of New York City.)			Scarlet fever	.....	55
Diphtheria	.....	143	Typhoid fever	.....	1
Influenza	.....	1,568	Whooping cough	.....	11
Measles	.....	252			
Pneumonia	.....	565	VIRGINIA.		
Scarlet fever	.....	314	Smallpox.—Bedford County	.....	2
Smallpox	.....	2			
Typhoid fever	.....	24	WASHINGTON.		
Whooping cough	.....	210	Chicken pox	.....	32
			Diphtheria	.....	19
NORTH CAROLINA.			German measles	.....	2
Cerebrospinal meningitis	.....	3	Influenza	.....	360
Chicken pox	.....	211	Measles	.....	2
Diphtheria	.....	30	Mumps	.....	54
Measles	.....	24	Pneumonia	.....	11
Scarlet fever	.....	32	Scarlet fever	.....	29
Septic sore throat	.....	10	Smallpox:		
Smallpox	.....	53	Spokane	.....	11
Trachoma	.....	1	Sumner	.....	8
Typhoid fever	.....	6	Scattering	.....	28
Whooping cough	.....	172	Tuberculosis	.....	2
			Typhoid fever	.....	2
OREGON.			Whooping cough	.....	37
Anthrax	.....	1			
Chicken pox	.....	21			

1 Deaths.

WEST VIRGINIA.		Cases.	WISCONSIN—continued.		Cases.
Diphtheria	.....	14	Milwaukee—Continued.	.....
Influenza:			Smallpox	.....	6
Princeton	.....	40	Tuberculosis	.....	12
Salem	.....	16	Typhoid fever	.....	1
Scattering	.....	26	Whooping cough	.....	24
Scarlet fever	.....	11	Scattering:		
Typhoid fever	.....	8	Chicken pox	.....	100
			Diphtheria	.....	44
			German measles	.....	1
			Influenza	.....	72
			Measles	.....	11
			Pneumonia	.....	7
			Scarlet fever	.....	117
			Smallpox	.....	34
			Tuberculosis	.....	63
			Whooping cough	.....	24
Milwaukee:					
Chicken pox	.....	41			
Diphtheria	.....	10			
Influenza	.....	1			
Lethargic encephalitis	.....	3			
Measles	.....	1			
Pneumonia	.....	8			
Scarlet fever	.....	18			

Delayed Reports for Week Ended Feb. 18, 1922.

DISTRICT OF COLUMBIA.	Cases.	KENTUCKY—continued.	Cases.
Chicken pox.....	70	Influenza—Continued.	
Diphtheria.....	20	Scott County.....	21
Influenza.....	8	Shelby County.....	35
Lethargic encephalitis.....	1	Scattering.....	149
Measles.....	4	Measles:	
Scarlet fever.....	13	Franklin County.....	52
Smallpox.....	4	Jefferson County.....	88
Tuberculosis.....	27	Scattering.....	7
Typhoid fever.....	3	Mumps.....	4
Whooping cough.....	6	Pneumonia.....	91
		Scarlet fever.....	15
KENTUCKY.		Septic sore throat.....	3
Chicken pox.....	19	Smallpox.....	10
Diphtheria.....	20	Tonsillitis.....	2
Influenza:		Trachoma.....	6
Boyle County.....	84	Tuberculosis.....	20
Caldwell County.....	39	Typhoid fever.....	8
Daviess County.....	31	Whooping cough.....	5
Fulton County.....	23		
Green County.....	23	WEST VIRGINIA.	
Hardin County.....	27	Diphtheria.....	16
Hart County.....	27	Influenza.....	59
Jefferson County.....	180	Scarlet fever.....	8
Muhlenberg County.....	29	Smallpox.....	3
Pendleton County.....	37	Typhoid fever.....	2

SUMMARY OF CASES REPORTED MONTHLY BY STATES.

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State.	Ceretrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Poliomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
Alabama (January, 1922).	.....	85	10	30	4	9	2	55	85	46
Colorado (December, 1921).	.....	301	7	19	19	1	1	217	284	46
Delaware (January, 1922).	.....	18	15	1	9	1	1	279	19	16
Idaho (January, 1922).	.....	15	1	10	10	1	7	57	46	6
Illinois (January, 1922).	15	1,871	1,231	40	893	1	7	1,944	406	63
Indiana (January, 1922).	4	491	120	40	40	1	1	430	125	21
Iowa (January, 1922).	4	237	1	18	18	1	1	450	223	2
Maine (January, 1922).	.....	66	49	11	11	1	1	161	10	6
Michigan (January, 1922).	.....	1,708	40	791	127	151	2	1,207	128	66
Minnesota (January, 1922).	3	377	3	87	87	1	1	882	446	30
Mississippi (January, 1922).	3	137	2,007	3,358	127	151	2	48	171	120
New Jersey (January, 1922).	10	787	423	2	894	94	9	1,478	8	35
New York (January, 1922).	32	2,204	3,618	2	2,874	9	2	2,868	1	137
North Carolina (January, 1922).	3	263	3	94	94	2	2	273	147	19
Ohio (January, 1922).	17	1,475	125	1	1,026	4	1	1,579	357	117
Rhode Island (January, 1922).	3	93	20	13	9	1	1	69	4	3
South Carolina (January, 1922).	2	209	31	13	3	1	1	20	55	5
South Dakota (January, 1922).	2	62	1	18	18	1	1	205	203	3
Washington (January, 1922).	2	148	111	26	26	6	6	168	381	21

RECIPROCAL NOTIFICATION.

Minnesota—January, 1922.

Cases of communicable diseases referred during January, 1922, to other State health departments by the Department of Health of the State of Minnesota.

Disease and locality of notification.	Referred to health authority of—	Why referred.
Diphtheria: Waterville, Le Sueur County.	Chicago, Cook County, Ill...	Patient had sore throat before leaving Chicago, Dec. 24; cultures positive Jan. 9 at Minnesota State Board of Health Laboratory.
Typhoid Fever: Albert Lea, Freeborn County.	Morse, Ashland County, Wis.	Patient became ill with typhoid fever in Albert Lea. Home in Morse, Wis.
Tuberculosis: Minnesota State Sanatorium, Cass County.	Sterling, Logan County, Colo.	Active case left sanatorium for home.
Mayo Clinic, Rochester, Olmsted County.	Bode, Humboldt County, Iowa.	1 open case, one moderately advanced, and one advanced, left clinic for their homes.
Buena Vista, Sanatorium, Wabasha County.	Edson, Alberta, Canada	An improved case left sanatorium for home.
U. S. Public Health Service, Hospital No. 65, St. Paul, Ramsey County.	Prescott, Yavapai County, Ariz.; Denver, Denver County, Colo.; Dunseith, Rolette County, N. Dak.	6 active cases transferred from hospital.
Do.....	Medora, Billings, County, N. Dak.; Ashley, McIntosh County, N. Dak.; Doyon, Ramsey County, N. Dak.; Mohall, Renville, County, N. Dak.; Cando, Towner County, N. Dak.; Fgeland, Towner County, N. Dak.; Bristol, Day County, S. Dak.; Castlewood, Hamlin County, S. Dak.; Buffalo, Harding County, S. Dak.; Eden, Marshall County, S. Dak.; Ipswich, Edmunds County, S. Dak.; Brookings, Brookings County, S. Dak.; Aberdeen, Brown County, S. Dak.	6 active cases, 2 inactive, 2 quiescent, 2 arrested, 1 undetermined, left hospital for their homes.

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922.

CEREBROSPINAL MENINGITIS.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Feb. 11, 1922.		City.	Median for previous years.	Week ended Feb. 11, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
California:				New Jersey:			
Long Beach.....	0	.....	2	Jersey City.....	0	1	.....
San Diego.....	0	1	1	Newark.....	0	1	.....
San Francisco.....	1	2	1	New York:			
Connecticut:				New York.....	6	8	1
New Haven.....	0	1	1	North Carolina:			
Illinois:				Raleigh.....	0	.....	3
Chicago.....	3	1	1	Ohio:			
Kentucky:				Cambridge.....	.....	1	1
Louisville.....	1	1	.....	Hamilton.....	0	.....	2
Maryland:				Toledo.....	0	1	1
Cumberland.....	0	1	.....	Pennsylvania:			
Michigan:				Philadelphia.....	1	2	1
Saginaw.....	0	.....	2	West Virginia:			
Missouri:				Bluefield.....	0	.....	1
Independence.....	0	.....	1	Charleston.....	0	.....	1
St. Louis.....	1	1	.....	Wisconsin:			
Nebraska:				Milwaukee.....	1	1	.....
Omaha.....	0	1	1	Racine.....	0	.....	1

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

DIPHTHERIA.

See p. 505; also Telegraphic weekly reports from States, p. 492, and Monthly summaries by States, p. 496.

INFLUENZA.

City.	Cases.		Deaths, week ended Feb. 11, 1922.	City.	Cases.		Deaths, week ended Feb. 11, 1922.
	Week ended Feb. 12, 1921.	Week ended Feb. 11, 1922.			Week ended Feb. 12, 1921.	Week ended Feb. 11, 1922.	
Alabama:				Louisiana:			
Birmingham.....		5		Baton Rouge.....	3	1	
Montgomery.....		1		New Orleans.....		10	1
Arkansas:				Maine:			
Fort Smith.....		3		Auburn.....		7	1
Little Rock.....	1	6		Biddeford.....		2	1
North Little Rock.....	1			Lewiston.....		7	
California:				Sanford.....		11	
Alameda.....		61		Waterville.....		1	
Bakersfield.....	1			Maryland:			
Berkeley.....		109	1	Baltimore.....	72	104	3
Long Beach.....		73	2	Cumberland.....	1	5	
Los Angeles.....	1	46	2	Massachusetts:			
Oakland.....		12		Amesbury.....		4	
Sacramento.....		413	6	Arlington.....		28	
San Francisco.....	14	2		Attleboro.....		33	
Santa Ana.....		4		Belmont.....		4	
Stockton.....		3		Boston.....	20	367	1
Vallejo.....				Braintree.....		7	
Colorado:				Brookline.....		2	
Denver.....			1	Brookline.....		4	
Connecticut:				Cambridge.....		102	1
Bridgeport.....		210	1	Chelsea.....		18	
Fairfield.....		1		Clinton.....		9	
Greenwich.....	5	38		Danvers.....		4	
Hartford.....		5	2	Everett.....		19	
Meriden.....		9		Fall River.....	3	38	
Milford.....		2		Frammingham.....		7	
New Haven.....		4	1	Greenfield.....		1	
Waterbury.....	1			Haverhill.....		58	
District of Columbia:				Holyoke.....		3	
Washington.....		9		Leominster.....		3	1
Florida:				Lowell.....		58	
Tampa.....		2		Lyons.....	1	18	
Georgia:				Malden.....		3	
Albany.....		1		Newburyport.....		6	
Athens.....	5	18	5	North Adams.....		4	
Augusta.....		2		Northampton.....		1	
Rome.....		5		Peabody.....		20	
Savannah.....		30	1	Quincy.....		28	1
Illinois:				Salem.....		3	
Chicago.....	19	298	13	Somerville.....		18	
Danville.....	1			Southbridge.....		4	
Decatur.....	11			Springfield.....		7	
Elgin.....		2		Wakefield.....		3	
La Salle.....		1		Waltham.....		5	
Oak Park.....		7		Watertown.....		3	
Quincy.....		1		Winthrop.....		10	
Springfield.....		1	1	Worcester.....		356	3
Indiana:				Michigan:			
Elkhart.....		1		Detroit.....	2	16	
Hammond.....		1	2	Flint.....		4	
Indianapolis.....			8	Grand Rapids.....		1	1
Iowa:				Highland Park.....		1	
Burlington.....		1		Minnesota:			
Kansas:				Minneapolis.....			1
Coffeyville.....	1			Winona.....		12	
Kansas City.....		4		Missouri:			
Lawrence.....		6	1	Joplin.....		12	
Parsons.....	1			Kansas City.....	2	31	7
Salina.....		5		St. Louis.....	1	12	1
Topeka.....		28	3	Springfield.....			2
Wichita.....				Montana:			
Kentucky:				Groat Falls.....			1
Covington.....	2			New Jersey:			
Louisville.....		224	3	Asbury Park.....		4	
Owensboro.....		41		Bayonne.....	1	4	

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922--Continued.

INFLUENZA--Continued.

City.	Cases.		Deaths, week ended Feb. 11, 1922.	City.	Cases.		Deaths, week ended Feb. 11, 1922.
	Week ended Feb. 12, 1921.	Week ended Feb. 11, 1922.			Week ended Feb. 12, 1921.	Week ended Feb. 11, 1922.	
New Jersey—Continued.				Ohio—Continued.			
Belleville.....	5	5	.....	Cleveland.....	2	29	2
Clifton.....	.....	12	.....	Columbus.....	2	.....	.....
East Orange.....	1	.....	.....	East Cleveland.....	.....	3	.....
Garfield.....	.....	7	.....	Hamilton.....	.....	2	.....
Hackensack.....	.....	13	.....	Mansfield.....	1	.....	.....
Harrison.....	.....	16	.....	Niles.....	.....	2	.....
Jersey City.....	.....	22	.....	Toledo.....	.....	.....	1
Kearny.....	.....	135	.....	Youngstown.....	.....	.....	1
Montclair.....	.....	22	2	Oregon:	.....	.....	.....
Morristown.....	.....	5	.....	Portland.....	.....	20	1
Newark.....	5	698	5	Pennsylvania:	.....	.....	.....
Orange.....	.....	20	.....	Philadelphia.....	9	49	14
Passaic.....	1	49	.....	Rhode Island:	.....	.....	.....
Paterson.....	.....	676	.....	Providence.....	.....	83	2
Plainfield.....	.....	46	.....	South Carolina:	.....	.....	.....
Trenton.....	.....	57	9	Charleston.....	.....	19	3
Union.....	.....	1	.....	South Dakota:	.....	.....	.....
West Hoboken.....	.....	.....	1	Sioux Falls.....	1	.....	.....
West Orange.....	.....	37	1	Tennessee:	.....	.....	.....
New Mexico:				Chattanooga.....	.....	1	.....
Albuquerque.....	.....	3	.....	Memphis.....	.....	.....	3
New York:				Texas:	.....	.....	.....
Albany.....	4	45	.....	Beaumont.....	.....	.....	1
Auburn.....	.....	4	.....	Dallas.....	4	.....	1
Binghamton.....	2	3	.....	Virginia:	.....	.....	.....
Buffalo.....	1	7	3	Alexandria.....	.....	.....	1
Ithaca.....	.....	6	.....	Danville.....	.....	1	.....
Jamestown.....	1	72	.....	Lynchburg.....	.....	1	.....
Middletown.....	.....	11	.....	Norfolk.....	1	.....	.....
Mount Vernon.....	1	168	.....	Petersburg.....	10	.....	.....
New York.....	84	7,070	128	Richmond.....	.....	.....	1
Niagara Falls.....	.....	1	.....	Roanoke.....	6	2	.....
North Tonawanda.....	.....	2	.....	Washington:	.....	.....	.....
Peekskill.....	.....	33	.....	Aberdeen.....	.....	380	.....
Port Chester.....	.....	2	.....	Seattle.....	.....	337	.....
Poughkeepsie.....	.....	4	.....	Spokane.....	.....	31	.....
Saratoga Springs.....	3	7	.....	West Virginia:	.....	.....	.....
Syracuse.....	.....	32	2	Blue field.....	.....	4	.....
Watertown.....	.....	1	.....	Charleston.....	.....	4	.....
Yonkers.....	.....	4	1	Clarksburg.....	.....	4	.....
North Carolina:				Fairmont.....	.....	10	.....
Durham.....	.....	.....	1	Huntington.....	.....	.....	1
Ohio:				Morgantown.....	3	19	.....
Akron.....	4	7	.....	Wisconsin:	.....	.....	.....
Ashtabula.....	.....	2	.....	Appleton.....	1	.....	.....
Chillicothe.....	.....	21	.....	Milwaukee.....	.....	3	.....
Cincinnati.....	2	43	11	Wausau.....	.....	1	.....

LEPROSY.

City.	Cases.	Deaths.
California:		
Los Angeles.....	1

LETHARGIC ENCEPHALITIS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Nebraska:			Oregon:		
Omaha.....	.....	1	Portland.....	.....	1
New York:					
Yonkers.....	1	.....		

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

MALARIA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Georgia—Continued		
Tuscaloosa.....	7	.....	Savannah.....	1	.....
California:			Maryland:		
Alameda.....	1	.....	Baltimore.....	1	.....
San Francisco.....	1	.....	New York:		
Florida:			New York.....	2	.....
Tampa.....	1	.....	Texas:		
Georgia:			Dallas.....	1	.....
Augusta.....	1	.....		

MEASLES.

See p. 505; also Telegraphic weekly reports from States, p. 492, and Monthly summaries by States, p. 496.

PELLAGRA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Louisiana:		
Birmingham.....		2	Baton Rouge.....	1	.....
California:			Virginia:		
Los Angeles.....		2	Lynchburg.....	1	1

PNEUMONIA (ALL FORMS).

Alabama:			Georgia—Continued.		
Birmingham.....	6	4	Brunswick.....		1
Montgomery.....		1	Rome.....	5	.....
Arizona:			Savannah.....		4
Tucson.....		3	Valdosta.....	1	.....
Arkansas:			Illinois:		
Fort Smith.....		3	Aurora.....		2
Hot Springs.....		1	Bloomington.....		2
Little Rock.....	2	.....	Centralia.....	1	.....
California:			Champaign.....	1	.....
Alameda.....		2	Chicago.....	279	67
Berkeley.....		2	Cicero.....	4	3
Long Beach.....	3	2	Decatur.....	3	2
Los Angeles.....	74	27	East St. Louis.....		3
Oakland.....		6	Elgin.....	2	.....
Pasadena.....		2	Evanston.....	2	.....
Sacramento.....	7	3	Freeport.....	3	1
San Diego.....		5	Jacksonville.....		1
San Francisco.....	23	9	La Salle.....	2	.....
Santa Ana.....		1	Mattoon.....		1
Santa Barbara.....		1	Oak Park.....	3	.....
Santa Cruz.....		1	Quincy.....	4	.....
Stockton.....		6	Rock Island.....	5	2
Colorado:			Rockford.....	1	.....
Denver.....		15	Springfield.....		3
Pueblo.....		2	Indiana:		
Connecticut:			Anderson.....		3
Bridgeport.....	8	2	Crawfordsville.....		1
Bristol.....		1	Fort Wayne.....		2
Derby.....		1	Gary.....		2
Greenwich.....	1	.....	Hammond.....	4	2
Hartford.....	2	1	Indianapolis.....		34
Manchester.....	3	.....	Kokomo.....		1
Meriden.....	4	.....	Logansport.....		2
New Haven.....		9	Muncie.....		3
Norwalk.....		1	South Bend.....		4
Delaware:			Terre Haute.....		6
Wilmington.....		8	Iowa:		
District of Columbia:			Council Bluffs.....		3
Washington.....		22	Kansas:		
Florida:			Coffeyville.....	1	.....
Tampa.....		1	Kansas City.....	10	.....
Georgia:			Topeka.....	18	16
A.....	1	.....	Wichita.....	5	3
		12	Kentucky:		
			Covington.....		4
			Louisville.....	37	21
			Owensboro.....	2	.....

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Louisiana:			Nebraska:		
Baton Rouge.....	2	1	Lincoln.....	2	1
New Orleans.....	17	24	Omaha.....		12
Maine:			Nevada:		
Auburn.....		1	Reno.....		1
Bangor.....	5		New Hampshire:		
Bath.....		1	Berlin.....	9	2
Biddeford.....	3	2	New Jersey:		
Lewiston.....		3	Atlantic City.....	3	
Portland.....		1	Bayonne.....	5	
Sanford.....	3		Belleville.....	1	
Waterville.....	1		Bloomfield.....	8	
Maryland:			Clifton.....	5	1
Baltimore.....	85	24	Elizabeth.....		7
Cumberland.....	4	2	Englewood.....	7	2
Massachusetts:			Garfield.....	4	1
Arlington.....		1	Hackensack.....		3
Attleboro.....		1	Harrison.....	1	
Beverly.....	5	1	Hoboken.....		14
Boston.....	68	37	Jersey City.....	27	
Braintree.....	2	1	Kearny.....	7	1
Brockton.....	2	1	Montclair.....	6	3
Brookline.....	2		Morristown.....	4	1
Cambridge.....	12	6	Newark.....	161	28
Chelsea.....		2	Orange.....	7	5
Chicopee.....	1	1	Passaic.....	8	9
Easthampton.....		1	Paterson.....	54	
Everett.....	2		Perth Amboy.....		1
Fall River.....		7	Plainfield.....	8	
Framingham.....		2	Rahway.....		1
Gardner.....		1	Summit.....		2
Haverhill.....	3	1	Trenton.....	29	14
Holyoke.....	5	3	Union.....	2	
Lawrence.....		6	West Hoboken.....		1
Leominster.....		1	West New York.....		2
Lowell.....	8	6	West Orange.....	8	1
Lynn.....	5	1	New Mexico:		
Malden.....		2	Albuquerque.....		3
Medford.....		1	New York:		
Melrose.....	2	1	Albany.....	21	
Methuen.....		2	Auburn.....	3	1
Newburyport.....		1	Buffalo.....	32	12
Newton.....	3	1	Glens Falls.....	2	
North Adams.....	4	2	Hornell.....	2	
Northampton.....	3	1	Hudson.....	2	
Pittsfield.....	3	2	Ithaca.....	4	
Quincy.....	1		Jamestown.....	6	1
Salem.....	4	1	Lackawanna.....	5	1
Somerville.....	5	1	Middletown.....	1	
Springfield.....	6		Mount Vernon.....	25	5
Taunton.....		3	Newburgh.....		4
Wakefield.....	1		New York.....	1,749	468
Waltham.....		3	Niagara Falls.....	5	2
Watertown.....	2	1	Ogdensburg.....		1
Westfield.....	2	1	Olean.....		2
Winthrop.....	2	1	Peekskill.....	1	
Worcester.....		13	Port Chester.....		2
Michigan:			Poughkeepsie.....	6	3
Ann Arbor.....	3		Rochester.....	22	7
Detroit.....	149	54	Rome.....	4	2
Flint.....		1	Saratoga Springs.....		
Grand Rapids.....	4	1	Syracuse.....	21	5
Kalamazoo.....	6	4	Troy.....		3
Muskegon.....	2		Watertown.....	2	
Pontiac.....	4		White Plains.....	4	
Port Huron.....	4		Yonkers.....	12	11
Saginaw.....	4	3	North Carolina:		
Minnesota:			Charlotte.....		3
Duluth.....		1	Greensboro.....		2
Minneapolis.....		8	Rocky Mount.....		1
St. Paul.....		6	Salisbury.....		2
Missouri:			Wilmington.....	2	1
Independence.....		2	Winston-Salem.....		2
Joplin.....	1		Ohio:		
Kansas City.....	35	21	Akron.....	3	
St. Joseph.....		11	Barberton.....	3	2
Springfield.....		2	Bucyrus.....		1
Montana:			Canton.....		3
Missoula.....		3	Chillicothe.....		1

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Ohio—Continued.			Texas—Continued.		
Cincinnati.....		16	Fort Worth.....		2
Cleveland.....	39	16	Galveston.....		1
Columbus.....		6	Houston.....		5
Dayton.....	1		Waco.....		4
East Cleveland.....		3	Utah:		
Findlay.....	1		Salt Lake City.....		11
Hamilton.....		1	Vermont:		
Lima.....		1	Burlington.....		1
Lorain.....			Rutland.....		1
Mansfield.....	7	1	Virginia:		
Middleton.....	3	2	Alexandria.....	2	1
Newark.....		1	Danville.....		1
Niles.....		1	Lynchburg.....		2
Piqua.....	4		Norfolk.....		3
Springfield.....		3	Petersburg.....		1
Toledo.....		5	Portsmouth.....		2
Youngstown.....		10	Richmond.....		8
Zanesville.....	1		Roanoke.....	6	1
Pennsylvania:			West Virginia:		
Philadelphia.....	126	77	Charleston.....		1
Rhode Island:			Clarksburg.....		2
Cranston.....		1	Fairmont.....	1	
Pawtucket.....		1	Huntington.....		3
Providence.....		13	Wheeling.....		5
South Carolina:			Wisconsin:		
Charleston.....		2	Green Bay.....		1
Tennessee:			Kenosha.....		2
Memphis.....		15	Milwaukee.....	4	
Texas:			Oshkosh.....		1
Beaumont.....		2			
Dallas.....	11	8			

POLIOMYELITIS (INFANTILE PARALYSIS).

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Feb. 11, 1922.		City.	Median for previous years.	Week ended Feb. 11, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
Florida:				New York:			
Tampa.....			1	New York.....	1	1	1
Illinois:				Ohio:			
Chicago.....	0	1	1	Cambridge.....		2	
Maryland:				Pennsylvania:			
Baltimore.....	0	1		Norristown.....	0	1	
Massachusetts:				Washington:			
Boston.....	0	2	1	Bellingham.....	0	1	
Lawrence.....	0	1		Wisconsin:			
				La Crosse.....	0	1	

RABIES IN ANIMALS.

City.	Cases.
Georgia:	
Savannah.....	1
Massachusetts:	
Belmont.....	2
West Virginia:	
Wheeling.....	1

RABIES IN MAN.

City.	Cases.	Deaths.
Ohio:		
Cleveland.....		1

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

SCARLET FEVER.

See p. 505; also Telegraphic weekly reports from States, p. 492, and Monthly summaries by States, p. 496.

SMALLPOX.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for pre- vious years.	Week ended Feb. 11, 1922.		City.	Median for pre- vious years.	Week ended Feb. 11, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Missouri:			
Mobile.....	1	3	2	Kansas City.....	7	4	2
Arkansas:				Montana:			
Little Rock.....	0	2		Great Falls.....	0	6	
California:				Missoula.....	0	2	
Bakersfield.....	0	15		New York:			
Berkeley.....	0	2		New York.....	1	1	
Los Angeles.....	2	5		Niagara Falls.....	0	1	
Oakland.....	0	9		North Carolina:			
San Bernardino.....	1	1		Durham.....	0	1	
San Francisco.....	4	1		North Dakota:			
Stockton.....	0	3		Fargo.....	4	2	
Colorado:				Grand Forks.....	5	1	
Denver.....	23	14	4	Ohio:			
Connecticut:				Ashtabula.....	0	1	
Bridgeport.....	0	17		Cincinnati.....	2	2	
Milford.....		2		Columbus.....	0	1	
District of Columbia:				Dayton.....	1	17	
Washington.....	0	3		Fremont.....	0	2	
Georgia:				Hamilton.....	2	5	
Albany.....		1		New Philadelphia.....	0	8	
Atlanta.....	7	3		Springfield.....	0	17	
Augusta.....	1	3		Toledo.....	1	3	
Illinois:				Oklahoma:			
Centralia.....	0	1		Oklahoma.....	4	12	
Chicago.....	2	8		Tulsa.....	3	2	
Indiana:				Oregon:			
Indianapolis.....	15	1		Portland.....	1	29	
Logansport.....	1	1		Pennsylvania:			
Iowa:				Beaver Falls.....	0	1	
Burlington.....	0	3		Harrisburg.....	0	1	
Cedar Rapids.....	6	1		Rhode Island:			
Council Bluffs.....	4	1		Providence.....	0	1	
Davenport.....	5	1		South Dakota:			
Des Moines.....	3	4		Sioux Falls.....	1	1	
Muscatine.....	0	8		Texas:			
Sioux City.....	9	2		Dallas.....	5	2	
Kansas:				Houston.....	0	2	1
Hutchinson.....	0	6		Waco.....	1	1	
Kansas City.....	0	11		Utah:			
Wichita.....	5	3		Salt Lake City.....	3	10	
Kentucky:				Washington:			
Louisville.....	1	1		Aberdeen.....	0	8	
Louisiana:				Seattle.....	7	4	
Baton Rouge.....	0	2		Spokane.....	16	14	
Maine:				Tacoma.....	2	11	
Lewiston.....	0	1		Walla Walla.....	2	5	
Michigan:				Yakima.....	28	1	
Alpena.....	0	1		West Virginia:			
Detroit.....	8	2		Bluefield.....	0	2	
Flint.....	3	1		Parkersburg.....	0	1	
Muskegon.....	3	1		Wisconsin:			
Saginaw.....	0	1		Manitowoc.....	0	3	
Minnesota:				Milwaukee.....	7	4	
Duluth.....	2	2		Superior.....	1	16	
Hibbing.....	0	3		Waukesha.....		1	
Minneapolis.....	31	12		Wyoming:			
St. Cloud.....	1	1		Casper.....		3	
St. Paul.....	6	26					
Winona.....	0	1					

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

TETANUS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Connecticut:			New York:		
Norwalk.....		1	New York.....	2	
Massachusetts:			South Carolina:		
Boston.....	1	1	Charleston.....		2
Peabody.....	1	1	Virginia:		
			Alexandria.....		1

TRICHINOSIS.

City.	Cases.	Deaths.
Massachusetts:		
Boston.....	4	2

TUBERCULOSIS.

See p. 505; also Telegraphic weekly reports from States, p. 492.

TYPHOID FEVER.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for pre- vious years.	Week ended Feb. 11, 1922.		City.	Median for pre- vious years.	Week ended Feb. 11, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Nebraska:			
Birmingham.....	0	5		Omaha.....	0		1
Mobile.....	0		1	New Jersey:			
Tuscaloosa.....	0	3		Newark.....	0	1	
Arkansas:				Paterson.....	0	1	
Little Rock.....	0	2		Rahway.....	0	1	
California:				New York:			
Los Angeles.....	2	1		Albany.....	1	1	
Oakland.....	0	1		Buffalo.....	1	1	1
Riverside.....	0	1		Ithaca.....	0	2	
District of Columbia:				Lackawanna.....	1	2	
Washington.....	2	1		New York.....	13	2	
Florida:				Niagara Falls.....	0	1	
Tampa.....		1	1	Syracuse.....	0		1
Georgia:				Ohio:			
Macon.....	0	1		Chillicothe.....	0	1	
Savannah.....	0	2		Oklahoma:			
Illinois:				Tulsa.....	1	1	
Aurora.....	0		1	Pennsylvania:			
Chicago.....	4	3	1	Lancaster.....	0	1	
Mattoon.....	0	1		Philadelphia.....	5	1	
Indiana:				Pittsburgh.....	0	1	
Logansport.....	0		1	South Carolina:			
Louisiana:				Charleston.....	0	1	
New Orleans.....	1	3		Texas:			
Maine:				Dallas.....	0	2	1
Bangor.....	0	1		Galveston.....	0	6	
Lewiston.....	0		1	Virginia:			
Massachusetts:				Alexandria.....	0	2	
Chelsea.....	0	1		Petersburg.....	0	2	
Fall River.....	1	1		Richmond.....	1	1	
Lawrence.....	1	1		Washington:			
Plymouth.....	0		1	Spokane.....	0	1	
Waltham.....	0	1		West Virginia:			
Michigan:				Huntington.....	0		1
Detroit.....	2		1	Morgantown.....	0	1	1
Highland Park.....	0	1		Wisconsin:			
Saginaw.....	1	1	1	La Crosse.....	0	1	
Minnesota:				Marinette.....	0	2	
Minneapolis.....	0	1		Milwaukee.....	1	1	
St. Paul.....	1	1					
Missouri:							
Kansas City.....	0	1					
St. Joseph.....	0	1					

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

TYPHUS FEVER.

City.	Cases.	Deaths.
Georgia:		
Atlanta.....	1	

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Alabama:										
Anniston.....	17,734		1						1	
Birmingham.....	178,270	58	3		1		1		10	9
Mobile.....	60,151	24								1
Montgomery.....	43,464	9	1							2
Tuscaloosa.....	11,996		1							
Arizona:										
Tucson.....	20,292	16		1						7
Arkansas:										
Fort Smith.....	28,811	6								
Hot Springs.....	11,095	4								1
Little Rock.....	64,997		3				2		6	
North Little Rock.....	14,048				1					
California:										
Alameda.....	28,806	9	1				3			
Bakersfield.....	18,638	8								
Berkeley.....	55,886	14	9		1		3			
Long Beach.....	55,593	24	4				2		1	2
Los Angeles.....	576,673	214	49	1			26		52	29
Oakland.....	216,361	57	22		1		5		6	3
Pasadena.....	45,354	19					2			
Richmond.....	16,843	2	5	1						
Riverside.....	19,341	6								1
Sacramento.....	65,857	23					2		2	3
San Bernardino.....	18,721	6		1					1	
San Diego.....	74,683	32	6				1		1	1
San Francisco.....	508,410	166	40	4	9		19		33	16
Santa Ana.....	15,485	5	1							
Santa Barbara.....	19,441	5								
Santa Cruz.....	10,917	3								
Stockton.....	40,296	19	5				13		1	
Vallejo.....	21,107	2								
Colorado:										
Denver.....	256,369	80	13		3		8	2		14
Pueblo.....	42,908	11	6				5			2
Trinidad.....	10,906		1				1			
Connecticut:										
Bridgeport.....	143,538	41	10	1	1		15	1	2	3
Bristol.....	20,620				2		2			
Derby.....	11,238	5								
Fairfield (town).....	11,475	0	1				1			
Greenwich (town).....	22,123		3	1	1		2		1	
Hartford.....	138,036	42	11	1	39		7		8	2
Manchester (town).....	18,370	1					2		1	
Meriden (city).....	29,842		5				3			
Milford (town).....	10,193	0							1	
New Haven.....	162,519	51	10		19		9	1	1	1
Norwalk.....	27,700	7								1
Norwich (city).....	22,304	4			2		3		1	1
Delaware:										
Wilmington.....	110,168	32					61			2
District of Columbia:										
Washington.....	437,571	140	27		4		13		31	14
Florida:										
Tampa.....	51,252	25	3				1		1	4
Georgia:										
Albany.....	11,555		3							
Atlanta.....	290,616	69	5	1	3		7		16	4
Augusta.....	52,548		1						2	
Brunswick.....	14,413									1
Macon.....	52,905				4		2			

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Georgia—Continued.										
Rome.....	13,252		2				2			
Savannah.....	83,252	29	1				1		2	2
Valdosta.....	10,783	2							1	
Idaho:										
Boise.....	21,363	3					4			
Pocatello.....	15,001	10		3						
Illinois:										
Alton.....	24,682	3	3				1			
Aurora.....	36,397	14	9		25		1		2	
Bloomington.....	28,725	10	1						1	
Centralia.....	12,491	0					2			
Champaign.....	15,873						3			
Chicago.....	2,701,705	693	169	11	151	1	159	4	239	56
Cicero.....	44,965	8	5		4		3			
Decatur.....	43,818	19	6		1		1		6	
East St. Louis.....	66,740	15							3	1
Elgin.....	27,454	7					1			
Evanston.....	37,215	6	4		4		2			
Freeport.....	19,669	6	1	1			1			
Galesburg.....	23,834		1							
Jacksonville.....	15,713	7	1				2			
Kewanee.....	16,026	0	1							
La Salle.....	13,050	1	1						1	1
Mattoon.....	13,552	3					1			1
Oak Park.....	39,830	8			6		6			
Quincy.....	35,978	6					3			
Rockford.....	65,651	11	4		1		9			
Rock Island.....	35,177	10							1	
Springfield.....	59,183	14	3				3	1	9	
Indiana:										
Anderson.....	29,767	5	3				5			
Clinton.....	10,962	6	1							
Crawfordsville.....	10,139	4								
East Chicago.....	35,967	3	2						1	
Elkhart.....	24,277	8	5	1						
Evansville.....	85,264	19	5							
Fort Wayne.....	86,549	15	5				3		1	1
Frankfort.....	11,585	4								
Gary.....	65,378	15	3				2			1
Hammond.....	36,004	16			3		1			
Huntington.....	14,000	4	1				5			
Indianapolis.....	314,194	128	22	1	25		11		9	4
Kokomo.....	30,067	5	2				1			
La Fayette.....	22,486	4	1				3			
Logansport.....	21,626	4	4		1		2			
Mishawaka.....	15,195	6	2	1			2		1	1
Muncie.....	36,624	11	2				1			
South Bend.....	70,983	12	2				1		1	
Terre Haute.....	66,083	20	4				7			2
Iowa:										
Burlington.....	24,057	11					2		1	1
Cedar Rapids.....	45,566		1				1			
Council Bluffs.....	36,162	12					2			1
Davenport.....	56,727		2	1			1			
Des Moines.....	126,468		1	1			24			
Dubuque.....	39,141		2							
Iowa City.....	11,267		2				1			
Marshalltown.....	15,731						1			
Mason City.....	20,065	5	1		1		2			
Muscatine.....	16,068	2	2				3			
Ottumwa.....	23,003						3			
Sioux City.....	71,227		4				2			
Waterloo.....	36,230		2				4			
Kansas:										
Atchison.....	12,630		1				3			
Coffeyville.....	13,452	2	8		1					
Fort Scott.....	10,693	3								
Hutchinson.....	23,203		2				3			
Kansas City.....	101,177		4				3		13	
Lawrence.....	12,456	3								
Leavenworth.....	16,912		4							
Parsons.....	16,028	6	3							

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Kansas—Continued.										
Salina.....	15,085	5	2							
Topeka.....	50,022	31	4				2		7	1
Wichita.....	72,128	30	5				10			2
Kentucky:										
Covington.....	57,121	25	1		12				2	2
Louisville.....	234,891	91	13	3	76	1	3		19	5
Owensboro.....	17,424		5				1		1	
Louisiana:										
Baton Rouge.....	21,782	4	2							
New Orleans.....	387,219	146	18	2			10		30	12
Maine:										
Auburn.....	16,985	6					3			
Bangor.....	25,978						1		1	
Bath.....	14,731	4								
Biddeford.....	18,008	6								
Lewiston.....	31,791	14	3						1	
Portland.....	69,272	15	1		1		22			1
Sanford.....	10,691	2					1			
Maryland:										
Baltimore.....	733,826	218	32	4	111	2	44		16	17
Cumberland.....	29,837	13	1	1			1			
Massachusetts:										
Adams.....	12,967	2	1				8			
Amesbury.....	10,035	2					1			
Arlington.....	18,665	5			4		1		1	
Attleboro.....	19,731	9	1							
Belmont.....	10,749	3								
Beverly.....	22,561	9	1				1		1	
Boston.....	748,060	219	65	2	124		47	1	50	16
Braintree.....	10,580	4			1					2
Brockton.....	66,128	12	13	1	2		15		2	1
Brookline.....	37,748	11					4		1	1
Cambridge.....	109,694	23	4		37	1	10		2	1
Chelsea.....	43,184	11			1		3		3	
Chicopee.....	36,214	9							2	2
Clinton.....	12,979	1							1	
Danvers.....	11,108						3			
Dedham.....	10,792	1					1			
Easthampton.....	11,251	1	1				1			1
Everett.....	40,120	8	4		25		8		1	1
Fall River.....	120,485	41	3	1	1		2		2	1
Framingham.....	17,033	8			1				1	
Gardner.....	16,971	8	1	1			5		3	1
Greenfield.....	15,462	4			14		1			
Haverhill.....	53,884	10	9		1		2			1
Holyoke.....	60,203	18			2		1			1
Lawrence.....	94,270	23	2		29	1			1	1
Leominster.....	19,744	13			1		1		1	2
Lowell.....	112,479	34	4	1			1		2	2
Lynn.....	99,148	24	8		6		7		4	4
Malden.....	49,103	16	6		6		4	1	1	
Medford.....	39,038	4			43				1	
Melrose.....	18,204	6					1			
Methuen.....	15,189	7	1		23		2		1	1
Newburyport.....	15,618	9								
Newton.....	46,054	15	2		2		3	1		
North Adams.....	22,282	4	1		1		1		1	
Northampton.....	21,951	9	2							
Norwood.....	12,627	4								1
Peabody.....	19,552	3			5		1		1	
Pittsfield.....	41,751	15	3				5		3	1
Plymouth.....	13,045	3								
Quincy.....	47,876	12	4		41		7		2	1
Salem.....	42,529	13	1		1		4	1	1	1
Somerville.....	93,091	30	10		42		8		5	
Southbridge.....	14,245	1					1			
Springfield.....	129,563	25	4		10		6		2	1
Taunton.....	37,137	11	1							
Wakefield.....	13,025	1								
Waltham.....	30,915	14	2		31	1	10			
Watertown.....	21,457	4							2	1
Webster.....	13,258	1								

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Massachusetts—Continued.										
West Springfield.....	13,443	1								
Westfield.....	18,604	9			3	1				
Winthrop.....	15,455	3			1					
Woburn.....	16,574	4								
Worcester.....	179,754		1		1		5	2	3	5
Michigan:										
Alpena.....	11,101		1				2			
Ann Arbor.....	19,516	12	4				7		1	
Battle Creek.....	36,164		1		3		3			
Benton Harbor.....	12,233	2					3			
Detroit.....	993,739	248	62	4	257		59		52	26
Flint.....	91,599	17	9	1	1		15			2
Grand Rapids.....	137,634	41	7				6		7	
Highland Park.....	46,499	4	4		2		3			
Ironwood.....	15,739	2								1
Kalamazoo.....	48,858	25	6	1			24	1	2	1
Marquette.....	12,718	1								
Muskegon.....	36,570	8	1							1
Pontiac.....	34,273	13			6		4			
Port Huron.....	25,944	5								
Saginaw.....	61,903	17	4		2		3			2
Sault Ste. Marie.....	12,006	2					1		1	1
Minnesota:										
Austin.....	10,118	5					1			
Duluth.....	98,917	16			3		10		4	1
Faribault.....	11,089	7								
Hibbing.....	15,089		3							
Mankato.....	12,469						1			
Minneapolis.....	380,582	102	26	2	31		53		11	8
St. Cloud.....	15,873						2			
St. Paul.....	234,595	74	7	1	1		46	2	8	4
Virginia.....	14,022								1	
Winona.....	19,143		1							
Missouri:										
Independence.....	11,686	9								
Jefferson City.....	14,490	3								
Joplin.....	29,855		1							
Kansas City.....	324,410	102	12		5		5		8	9
St. Joseph.....	77,939	39	3	1			3	1		
St. Louis.....	772,897	217	54	1	4		14		33	13
Springfield.....	39,631	20								2
Montana:										
Billings.....	15,100	2	1				3			1
Great Falls.....	24,121	5	7	1						
Missoula.....	12,668	9			1		5			
Nebraska:										
Lincoln.....	54,934	8	2		8					
Omaha.....	191,601	57	10		44		4			2
Nevada:										
Reno.....	12,016	5								
New Hampshire:										
Berlin.....	10,104	7					1			
Dover.....	13,029	2			8					1
Keene.....	11,210	3					1			1
New Jersey:										
Asbury Park.....	12,400	4	1				1			
Atlantic City.....	50,682	8					10		2	
Bayonne.....	76,754		4		4		1		4	
Belleville.....	15,660		1				3		1	
Bloomfield.....	22,019	3			4		4			
Clifton.....	26,470	9					1			
Elizabeth.....	95,682		22	1	1		11		2	
Englewood.....	11,627	4					2			
Garfield.....	19,381	7	1				2			
Hackensack.....	17,667	14	2		1		2			
Harrison.....	15,721		1		1		1			
Hoboken.....	68,166	33	4	1			4		1	2
Jersey City.....	297,864		21		61		25		7	
Kearny.....	26,724	3			1		3		1	
Montclair.....	28,810	10	1				5			
Morristown.....	12,548	4	2				3			
Newark.....	414,216	134	26	5	70	1	92	1	29	7
Orange.....	33,268	14	3				3		1	

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
New Jersey—Continued.										
Passaic.....	63,824	21	2	1	3		7		3	
Paterson.....	135,866	9	9		32		6		5	
Perth Amboy.....	41,707	6	4				1		1	
Phillipsburg.....	16,923	4			1					
Plainfield.....	27,700	17	2		1		1			
Rahway.....	11,042	4			1		1		1	
Summit.....	10,174	4			1		1		1	
Trenton.....	119,289	70	2	2			8		4	5
Union.....	20,651	2	2		1		1		1	
West Hoboken.....	40,068	5			6		8		2	
West New York.....	29,926	4	4		1		3			
West Orange.....	15,573	3					2			
New Mexico:										
Albuquerque.....	15,157	10					2		2	1
New York:										
Albany.....	113,344		7		16				6	
Auburn.....	36,192	8	6				2			
Binghamton.....	66,800	9	2		1		10		8	
Buffalo.....	503,775	140	19	2	3		40	3	16	10
Geneva.....	14,648	3								
Glens Falls.....	16,638	6					1			
Hornell.....	15,025	4			1					
Hudson.....	11,745	4			9					
Ithaca.....	17,004	7							1	
Jamestown.....	38,917	10	4		13		3			1
Lackawanna.....	17,918	4	1				3		1	
Lockport.....	21,308	9			1		1			
Middletown.....	18,420	2	2		1		1		1	
Mount Vernon.....	42,726	22			1		6			
Newburgh.....	30,366	14	1				2		3	
New York.....	5,621,151	2,067	295	52	982	17	408	8	1,297	117
Niagara Falls.....	50,760	25	2		1		15		1	
North Tonawanda.....	15,482	3	2		1					
Ogdensburg.....	14,609	11								
Olean.....	20,506	5								
Peeckskill.....	15,868	5					1			
Plattsburg.....	10,909	9								
Port Chester.....	16,573	4	2	1						
Poughkeepsie.....	35,000	12			38				3	1
Rochester.....	295,750	69	18	1	2		6		5	4
Rome.....	20,341	13	15		15		1			2
Saratoga Springs.....	13,181	5					2		1	
Syracuse.....	171,717	59	23	2	1		17		4	4
Troy.....	72,013	27	4				1		4	1
Watertown.....	31,285	7	2	1			5		3	
White Plains.....	21,031	6			55		1		1	
Yonkers.....	100,226	32	6	2	3		8			
North Carolina:										
Charlotte.....	46,338	16							2	1
Durham.....	21,719	5	1		1					
Greensboro.....	19,861	4								
Raleigh.....	24,418	15	3							1
Rocky Mount.....	12,742	5								
Salisbury.....	13,884	8								
Wilmington.....	33,372	10					2			
Winston-Salem.....	48,395	18	2				2		7	4
North Dakota:										
Fargo.....	21,961	1					2			
Grand Forks.....	14,010		1				1			
Ohio:										
Akron.....	208,435	27	1		24		11		3	
Alliance.....	21,603	3	1							
Ashtabula.....	22,082	2	1						2	1
Barberton.....	18,811	2	1						1	
Bucyrus.....	10,425	6								1
Cambridge.....	13,104	6	1		3					
Canton.....	87,091	12	9		4		4		1	
Chillicothe.....	15,831	3	2				1			
Cincinnati.....	401,247	141	14		52		3		17	10
Cleveland.....	795,836	158	25	1	83		78			16
Columbus.....	237,031	71	5	2	1		5		4	

¹ Pulmonary tuberculosis only.

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Ohio—Continued.										
Coshocton.....	10,847		1				1			
Dayton.....	152,559	34	8		1				1	
East Cleveland.....	27,292	8					3		2	
Findlay.....	17,021	1			1					
Fremont.....	12,468	5	1				1			
Hamilton.....	39,675	12	4		1		1			
Lima.....	41,306	7	2						1	1
Lorain.....	37,295						2		1	
Mansfield.....	27,824	7	2				3	1	2	
Marion.....	27,891		2				1			
Martins Ferry.....	11,634		1						1	
Middletown.....	23,594	8	1				1			
Newark.....	26,718	11	5				11		2	2
New Philadelphia.....	10,718						1			
Niles.....	13,080	3	2				2			
Norwood.....	24,966	3								
Piqua.....	15,044	0							2	
Salem.....	10,305		1				4			
Springfield.....	60,840	16	4							
Steubenville.....	28,508	11					1			
Toledo.....	243,109	55	12		7		8		6	6
Youngstown.....	132,358	34	4	3	6		6		1	1
Zanesville.....	29,569	9	1				10		1	
Oklahoma:										
Oklahoma.....	91,258	31	2				3		4	1
Tulsa.....	72,075				4		2			
Oregon:										
Portland.....	258,288	67	11	1	1		7		4	5
Pennsylvania:										
Allentown.....	73,502		1		1		3		3	
Altoona.....	60,331		1				1			
Ambridge.....	12,730		1							
Berwick.....	12,181		1		15					
Bethlehem.....	50,358		6				4			
Braddock.....	20,879		2							
Butler.....	23,778		1				3			
Canonsburg.....	10,632		2		1		1			
Carbondale.....	18,640		1							
Carnegie.....	11,516		1							
Carrick.....	10,504				1					
Chambersburg.....	13,171						1			
Chester.....	58,030		2		1		2			
Connellsville.....	13,804						1			
Dickson City.....	11,049								1	
Dunmore.....	20,250						1			
Duquesne.....	19,011				1		2			
Easton.....	33,813		1				3			
Erie.....	93,372		6		1		5		5	
Farrell.....	15,586				2		1			
Harrisburg.....	75,917		4		1		4			
Hazleton.....	32,277		2		1					
Jeannette.....	10,627						1			
Johnstown.....	67,327		4		3		1			
Lancaster.....	53,150		8		11		8			
Lebanon.....	24,643		3		1		1			
McKeesport.....	45,975		1		1					
McKees Rocks.....	16,713		1				2			
Mahanoy City.....	15,590				5					
Monessen.....	18,179						2			
Mount Carmel.....	17,469		1		1		1		1	
Nanticoke.....	22,614		1		6					
New Castle.....	44,938		1		3		3			
New Kensington.....	11,987				3					
Norristown.....	32,319		1				3		3	
North Braddock.....	14,928						1			
Oil City.....	21,274				1					
Philadelphia.....	1,823,158	562	79	5	7		128	5	81	38
Phoenixville.....	10,484		1				2			
Pittsburgh.....	588,193		21		30		36		14	
Pittston.....	18,497						1		1	
Pottstown.....	17,431		1				7			
Pottsville.....	21,876		1		14					
Punxsutawney.....	10,311						1			

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Pennsylvania—Continued.										
Reading.....	107,784		9		2					
Scranton.....	137,783		10		1		6			
Shamokin.....	21,204		2		1					
Sharon.....	21,747				8		4			
Steelton.....	13,428						5			
Sunbury.....	15,721				14					
Tamaqua.....	12,363		1		2					
Uniontown.....	15,692						3			
Washington.....	21,480		1		29				1	
Wilkes-Barre.....	73,833		7		18		1			
Wilkesburg.....	24,403		1		1		1			
Williamsport.....	36,198		6		1		2			
York.....	47,512		3		1		1		1	
Rhode Island:										
Cranston.....	29,407	7			1					
Cumberland (town).....	10,077						1			
Newport.....	30,255	4	2				5			
Pawtucket.....	64,248	12	1							1
Providence.....	237,595	69	18	1	1		3			3
South Carolina:										
Charleston.....	67,957	23					1			1
Columbia.....	37,524								2	
South Dakota:										
Sioux Falls.....	25,176	1	6		2		1			
Tennessee:										
Chattanooga.....	57,895		1		1		1			
Memphis.....	162,351	65	8		1		5	1	11	2
Texas:										
Beaumont.....	40,422	9	3							
Corpus Christi.....	10,522	3								
Dallas.....	158,976	48		1	66		3		1	3
Fort Worth.....	106,482	30	7		1				4	3
Galveston.....	44,255	17	1							3
Houston.....	138,076	35	1				2	1		3
Waco.....	38,500	12	1							1
Utah:										
Salt Lake City.....	118,110	45	2	1			6			1
Vermont:										
Barre.....	10,008						2			
Burlington.....	22,779	12	3		1		8			
Rutland.....	14,951	9								
Virginia:										
Alexandria.....	18,060	6							1	1
Danville.....	21,539	7								1
Lynchburg.....	29,956	11	1					1		
Norfolk.....	115,777									1
Petersburg.....	31,002	7	1	1			1		2	3
Portsmouth.....	54,387	20							2	
Richmond.....	171,667	66	2	1	26		3		9	2
Roanoke.....	50,842	17	6							4
Washington:										
Aberdeen.....	15,337						1			
Bellingham.....	25,570				1					
Everett.....	27,644		3				1			
Seattle.....	315,652		2		1		10		3	
Spokane.....	104,437		16		2		9			
Tacoma.....	96,965		6		1		3		2	
Vancouver.....	12,637		1		1					
Walla Walla.....	15,503		2				2			
Yakima.....	18,539		1				4			
West Virginia:										
Bluefield.....	15,282	5								
Charleston.....	39,608	13			2		4			
Clarksburg.....	27,869	12	3		2					1
Fairmont.....	17,851		3				1			
Huntington.....	50,177	19	3							2
Martinsburg.....	12,515				2					
Morgantown.....	12,127		2							
Moundsville.....	10,669	6			3		1			
Parkersburg.....	20,059		2				1			
Wheeling.....	54,322	15	3	1	1		1			

CITY REPORTS FOR WEEK ENDED FEB. 11, 1922—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Wisconsin:										
Appleton.....	19,561		2							
Beloit.....	21,284	5	2				4		1	
Eau Claire.....	20,880						1			
Fond du Lac.....	23,427	10	1						1	
Green Bay.....	31,017	6	1				3			1
Janesville.....	18,293	5	1							
Kenosha.....	40,472	10	3		1		2			
La Crosse.....	30,363						1			
Madison.....	38,378		2				3			
Manitowoc.....	17,563		1				1		2	
Marinette.....	13,610									
Milwaukee.....	457,147		24		3		23		22	
Oshkosh.....	33,162	10	3				1		4	1
Racine.....	58,593	9	7		1		10			1
Sheboygan.....	30,953		2				2			
Superior.....	39,624	12	4				12			
Waukesha.....	12,558						2			
Wausau.....	18,661		1						1	
West Allis.....	13,765						1			
Wyoming:										
Casper.....	11,447	4								
Cheyenne.....	13,829	3					1			

FOREIGN AND INSULAR.

BERIBERI ON VESSEL.

Steamship "New China"—At Salina Cruz, Mexico.

Under date of February 10, 1922, four deaths from beriberi were reported as occurring among Chinese passengers on the steamship *New China* at Salina Cruz, Mexico, since September, 1921. The *New China* was reported at Salina Cruz October 13 and December 15, 1921.

On August 14, 1921, the *New China* arrived at Mazatlan, Mexico, with 60 cases of beriberi on board and a history of two deaths from the disease en route. The occurrence of six deaths from beriberi on board was reported after the arrival of the vessel at Mazatlan, making a total of eight deaths from the disease from the date of the vessel's departure from Hongkong.¹

CHINA.

Plague—Hongkong.

During the two weeks ended January 14, 1922, six cases of plague with four deaths were reported at Hongkong, China.

CUBA.²

Communicable Diseases—Habana—Provinces.

Communicable diseases have been notified in Cuba as follows:

Habana.

Disease.	Jan. 21-31, 1922.		Remain- ing under treatment Jan. 31, 1922.
	New cases.	Deaths.	
Chicken pox.....	7	1	10
Diphtheria.....	2	.....	4
Leprosy.....	1	.....	11
Malaria.....	23	.....	a 27
Measles.....	1	.....	1
Scarlet fever.....	14	.....	b 18
Smallpox.....	.....	.....	c 1
Typhoid fever.....	6	1	d 23

a From the interior, 19.

b From the interior, 1.

c From the interior.

d From the interior, 4.

¹ Public Health Reports, Sept. 23, 1921, p. 2337.

² Report of communicable diseases in Cuba for the period Jan. 1-10, 1922, appearing in Public Health Reports, Jan. 27, 1922, p. 191, should have been stated as for Habana only.

Provinces.

Provinces.	New cases reported Dec. 11-31, 1921.									
	Chicken pox.	Diph- theria.	Infan- tile te- tanus.	Malaria.	Measles.	Paraty- phoid fever.	Polio- myelitis (infantile paraly- sis).	Scarlet fever.	Small- pox.	Ty- phoid fever.
Camaguey.....	1	1	.....	81	.....	1	4	1	52	6
Habana.....	4	9	1	45	6	3	1	7	.....	17
Matanzas.....	1	4	2	.....	.....	1	.....	.....	.....	4
Oriente.....	1	4	.....	239	1	1	.....	.....	156	22
Pinar del Rio.....	.....	6	.....	19	1	2	1	.....	.....	4
Santa Clara.....	10	3	1	9	.....	4	3	1	2	7
Total.....	17	27	4	393	8	12	9	9	210	60

Habana—Mortality—1902-1921.

The following table gives the number of deaths (and the death rates) from certain communicable diseases and from all causes in Habana during 1921 as compared with 1902, in which year the Republic was proclaimed:

	1902.		1921.	
	Deaths.	Rate per 10,000.	Deaths.	Rate per 10,000.
Diphtheria.....	25	0.92	17	0.45
Influenza.....	53	1.96	49	1.31
Malaria.....	77	2.85	23	.61
Measles.....	4	.15	4	.11
Scarlet fever.....	11	.41	3	.08
Smallpox.....	.....	.....	.....	.....
Tuberculosis, pulmonary.....	885	32.76	1,025	27.37
Typhoid fever.....	87	3.22	113	3.02
Whooping cough.....	3	.11	18	.48
Yellow fever.....	.....	.....	.....	.....
Total.....	1,145	42.39	1,252	33.43
Total deaths from all causes.....	5,832	215.92	7,457	199.12
Population.....	270,103	.....	374,502	.....

ECUADOR.

Plague—Plague-Infected Rats—Guayaquil.

During the period January 16 to 31, 1922, eight cases of plague with three deaths were reported at Guayaquil, Ecuador.

During the same period, of 3,200 rats examined at Guayaquil, 70 rats were found plague infected.

EGYPT.

Shaving Brushes—Guarantee of Disinfection Required.

According to information, dated January 17, 1922, the Egyptian department of health will require consignments of shaving brushes manufactured in the United Kingdom and exported to Egypt to be accompanied by certificate of disinfection.

GREAT BRITAIN.**Influenza—Newcastle upon Tyne.**

An outbreak of influenza was reported at Newcastle upon Tyne, England, during the month of January, 1922. During the week ended January 28, the reports indicated that the epidemic was abating. For this period, 133 deaths from influenza and pneumonia combined were reported, out of a total of 273 deaths. (Population, census, 1922, 274,955.) It was stated that 75 per cent of the fatalities from influenza were among children.

ITALY.**Epidemic Influenza—Trieste.**

Epidemic influenza was reported present at Trieste, Italy, from about the middle of December, 1921, to the same period in January, 1922. It was estimated that about 10 per cent of the population were affected.

JAMAICA.**Alastrim.**

During the four weeks ended January 28, 1922, alastrim or Kaffir pox was reported in the Island of Jamaica as follows: Week ended January 7, 1922, 41 new cases; week ended January 14, 6 new cases; January 21, 10 new cases; week ended January 28, 44 new cases.

Typhoid Fever—Kingston and Vicinity.

During the period under report 13 cases of typhoid fever were reported in Kingston and 118 cases in the surrounding country.

MEXICO.**Pernicious Malaria—Mazatlan.**

During the week ended February 12, 1922, a death from pernicious malaria was reported at Mazatlan, Mexico.

Plague-Infected Rodent—Tampico.

The finding of one plague-infected rodent was reported at Tampico, Mexico, during the period February 12-18, 1922, making a total of 9 infected rodents found at that place from January 1 to February 18, 1922.

SIAM.**Modern Leper Colony Proposed—Bangkok.**

According to information, dated December 19, 1921, the institution at Bangkok, Siam, of a modern leper colony was under consideration, the ministry of local government and the Siamese Red Cross to cooperate in the work. It was understood that submission to treat-

ment would be voluntary at first, but that a segregation law had been proposed to be enforced as soon as the plans were sufficiently developed and the staff was organized. The treatment proposed was substantially that in use in the Hawaiian Islands, based on the administration of ethyl esters of chaulmoogra oil. It was stated that Siam has large areas of the trees from the seeds of which chaulmoogra oil is derived. The number of well-developed cases of leprosy in Bangkok alone was estimated at more than 500.

SWEDEN.

Influenza—Goteborg—Stockholm.

Influenza has been reported in Sweden as follows:

Goteborg.—Three weeks ended January 28, 1922, 2,469 cases (population, 228,053).

Stockholm.—Week ended January 14, 1922, 259 cases with 9 deaths (population, 419,788, officially estimated).

SWITZERLAND.

Influenza—Zurich.

Information received, under date of February 2, 1922, shows a total number of 2,083 cases of influenza with 11 deaths reported at Zurich, Switzerland, during the period November 13, 1921, to January 28, 1922. The largest number of reported cases was for the week ended January 21, 1922, viz, 825, and the lowest for the period November 13 to December 31, 1921, viz, 100 cases. The total of 2,083 cases reported includes 444 cases in children under 15 years of age.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

Reports Received During Week Ended Mar. 3, 1922.¹

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Oct. 30-Nov. 12, 1921: Deaths, 6,284.
Calcutta.....	Jan. 8-14.....	14	12	
Philippine Islands:				
Manila.....	do.....	15	7	
Provinces—				
Pampanga.....	Dec. 25-31.....	1		

PLAGUE.

	Date.	Cases.	Deaths.	Remarks.
China:				
Hongkong.....	Jan. 1-14.....	6	4	
Ecuador:				
Guayaquil.....	Jan. 16-31.....	8	3	Rats examined, 3,200; found infected, 70.

¹ From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received During Week Ended Mar. 3, 1922—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Egypt.....				Jan. 1-26, 1922: Cases, 11; deaths, 6.
Cities—				
Alexandria.....	Jan. 21.....	1	1	
Suez.....	Jan. 21-26.....	2	2	
Provinces—				
Keneh.....	Jan. 21-26.....	2	1	One case septicemic.
India.....				Dec. 25-31, 1921: Cases, 923; deaths, 711.
Karachi.....	Jan. 8-14.....	1		
Madras Presidency.....	do.....	173	111	
Mexico:				
Tampico.....				Feb. 12-18, 1922: One plague-infected rodent found.
Straits Settlements:				
Singapore.....	Dec. 25-31.....	1	1	

SMALLPOX.

Brazil:				
Sao Paulo.....	Dec. 19-25.....	9		
Do.....	Dec. 26-Jan. 1.....	1		
Canada:				
New Brunswick—				
York County.....	Jan. 29-Feb. 4.....	1		
Ontario—				
Kingston.....	Feb. 5-11.....	2		
Toronto.....	do.....	2		
China:				
Amoy.....	Jan. 1-14.....		3	
Foochow.....	Jan. 8-14.....			Present.
Hankow.....	do.....	1		
Hongkong.....	Jan. 1-14.....	3	1	
Nanking.....	do.....			Do.
Shanghai.....	Jan. 9-22.....	16	71	Cases, foreign; population, 24,700.
Dominican Republic:				Deaths, Chinese; population, 790,000.
San Pedro de Macoris.....	Jan. 29-Feb. 4.....	59		Including surrounding country.
Egypt:				
Port Said.....	Jan. 22-28.....	1		
Great Britain:				
Swansea.....	Jan. 17-23.....	2		Imported on vessel from Persian Gulf.
India.....				Oct. 30-Nov. 12, 1921: Deaths, 169.
Bombay.....	Dec. 25-31.....	1	1	
Calcutta.....	do.....	11	9	
Do.....	Jan. 1-14.....	12	12	
Karachi.....	Jan. 8-14.....	5	1	
Madras.....	do.....	51	20	
Japan:				
Kobe.....	Jan. 23-29.....	3	1	
Java:				
West Java—				
Batavia.....	Dec. 30-Jan. 5.....	1	2	In Province—cases, 6; deaths, 3.
Mexico:				
Mexico City.....	Dec. 25-31.....	13		Including municipalities in Federal District.
Do.....	Jan. 1-7.....	16		Do.
San Luis Potosi.....	Jan. 29-Feb. 11.....		1	
Newfoundland:				
St. Johns.....	Feb. 4-10.....	1		
Palestine:				
Jerusalem.....	Jan. 10-23.....	18		
Panama:				
Bocas del Toro—				
Sursuba.....	Feb. 8.....	1		Total, Jan. 18-Feb. 8, 1922: Cases, 11.
Spain:				
Seville.....	Jan. 15-28.....		4	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received During Week Ended Mar. 3, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Syria:				
Aleppo.....	Jan. 15-21.....	.....	.....	Present.
Cilecia.....	.....do.....	.....	.....	Do.
Diarbekir.....	.....do.....	.....	.....	Do.
Urfa.....	.....do.....	.....	.....	Do.
Tunis:				
Tunis.....	Jan. 22-28.....	.....	2	
Union of South Africa:				
Cape Province.....	Dec. 11-31.....	.....	.....	Outbreaks.
Natal.....	Dec. 25-31.....	.....	.....	Do.
Orange Free State.....	Dec. 18-24.....	.....	.....	Do.
Southern Rhodesia.....	Dec. 29-Jan. 4.....	4	.....
Transvaal.....	Dec. 25-31.....	.....	.....	Do.
Johannesburg District.....	Jan. 1-7.....	.....	.....	Do.
On vessel.....	Jan. 17-23.....	2	.....	At Swansea, England, from vessel from Persian Gulf.

TYPHUS FEVER.

Austria:				
Vienna.....	Jan. 1-14.....	3	.....
China:				
Antung.....	Dec. 26-Jan. 1.....	1	.....
Harbin.....	Jan. 2-8.....	3	.....
Egypt:				
Alexandria.....	Jan. 22-28.....	5	1	
Cairo.....	Dec. 3-9.....	2	1	
Port Said.....	Jan. 22-28.....	1	.....
Spain:				
Madrid.....	Dec. 1-31.....	.....	1	
Mexico:				
Mexico City.....	Dec. 25-31.....	42	.....	Including municipalities in Federal District.
Do.....	Jan. 1-7.....	42	.....	Do.
San Luis Potosi.....	Feb. 5-11.....	.....	.....	Present.
Union of South Africa:				
Cape Province.....	Dec. 11-24.....	.....	.....	Outbreaks.
Natal.....	Dec. 11-17.....	.....	.....	Do.
Orange Free State.....	Dec. 11-31.....	.....	.....	Do.
Do.....	Jan. 1-7.....	.....	.....	Do.

Reports Received from Dec. 31, 1921, to Feb. 24, 1922.

CHOLERA.

Place.	Date.	Cases.	Deaths.	
India.....				Oct. 2-29, 1921: Deaths, 19,185.
Bombay.....	Oct. 30-Nov. 5.....	1	.....
Calcutta.....	Oct. 23-Dec. 31.....	71	60	
Do.....	Jan. 1-7.....	6	5	
Karachi.....	Nov. 6-12.....	.....	1	
Madras.....	Dec. 11-31.....	4	1	
Do.....	Jan. 1-14.....	5	4	
Rangoon.....	Oct. 1-Dec. 31.....	30	24	
Do.....	Jan. 1-7.....	1	1	
Indo-China:				
Saigon.....	Nov. 6-12.....	1	1	
Java:				
West Java—				
Batavia.....	Nov. 1-7.....	2	2	At Lebak.
Philippine Islands:				
Manila.....	Nov. 13-Dec. 31.....	49	18	
Do.....	Jan. 1-7.....	30	6	
Provinces—				
Zambales.....	Dec. 11-31.....	31	18	
Poland.....	Dec. 11-31.....	.....	.....	Aug. 14-Sept. 10, 1921. Cases, 4; deaths, 1.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 31, 1921, to Feb. 24, 1922—Continued.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Russia:				
Kharkoff.....	Jan. 28.....			Present.
Kieff.....	Dec. 15-Jan. 11.....	259		
Latvia—				
Riga.....				At quarantine station in October, 1921: One case.
Odessa.....	Jan. 28.....			Present.
Siam:				
Bangkok.....	Oct. 23-Dec. 10.....	5	3	

PLAGUE.

Asia Minor:				
Smyrna.....	Nov. 27-Dec. 3....	1	1	
Australia:				
New South Wales—				
Sydney.....	do.....	2	1	Dec. 7-13, 1921: Four plague rats.
Do.....	Jan. 29-Feb. 11....	2		
Queensland—				
Brisbane.....	Oct. 30-Dec. 24....	27	18	Total, Aug. 22-Dec. 24, 1921: Cases, 39; deaths, 25. Total infected rats, 53.
Do.....	Jan. 21-28.....	3		
Cairns.....	Oct. 30-Dec. 10....	6	3	Plague rats: Eight.
Cooktown.....	Oct. 30-Nov. 5....	1		Pestis minor.
Ingham.....				Nov. 6-Dec. 24, 1921: Plague rats, 14.
Inisfall.....				Nov. 27-Dec. 3, 1921: One plague rat.
Ipswich.....	Dec. 11-17.....	1	1	
Fort Douglas.....	Nov. 13-19.....	1	1	
Townsville.....	Nov. 20-Dec. 3....	2	2	Total cases, 27; deaths, 18.
Azores:				
Islands—				
Fayal.....	Jan. 16-22.....	2	2	
St. Michael.....				Nov. 27-Dec. 31, 1921: Cases, 23; deaths, 9. Jan. 1-21, 1922: Cases, 13; deaths, 8.
Arrifes.....	Dec. 25-31.....	1	1	Three miles from port.
Do.....	Jan. 1-7.....	1		
Fenais d'Ajuda.....	Nov. 27-Dec. 3....			Present. Six miles from port.
Do.....	Jan. 15-21.....	3	2	
Ribeira Grande.....	Nov. 13-Dec. 10....	19	6	9 miles from port.
Do.....	Jan. 8-14.....	9		
Livramento.....	Dec. 4-10.....	2		Vicinity of Ponta Delgada.
Ponta Delgada.....	do.....	1		
Brazil:				
Bahia.....	Oct. 30-Dec. 17....	9	9	
British East Africa:				
Uganda.....	Aug. 1-Oct. 31....	90	61	Reports of inspectors, deaths, 343; reports of chiefs, deaths, 651.
Ceylon:				
Colombo.....	Oct. 30-Dec. 31....	13	10	Oct. 30-Dec. 24, 1921: Rodent plague, 6.
China:				
Hongkong.....	Nov. 20-Dec. 17....	6		
Ecuador:				
Guayaquil.....	Nov. 16-Dec. 31....	18	6	Rats examined, 2,958; found infected, 90. Total, July-Dec. 15, 1921: Cases, 28. Jan. 1-15, 1922: Rats examined, 3,000; found infected, 83.
Do.....	Jan. 1-15.....	12	6	
Egypt.....				Jan. 1-Dec. 31, 1921: Cases, 356; deaths, 153. Jan. 1-12, 1922: Cases, 5; deaths, 2.
City—				
Alexandria.....	Dec. 5-30.....	7	2	
Port Said.....	Dec. 20.....	1		
Suez.....	Nov. 22-Dec. 31....	16	9	
Do.....	Jan. 2.....	1		
Province—				
Girgeh.....	Jan. 12.....	1		Septicemic.
Kench.....	Dec. 1.....	1	1	Do.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 31, 1921, to Feb. 24, 1922—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Oct. 23-Dec. 24, 1921: Cases, 7,767; deaths, 5,747. (Reports, weeks ended Dec. 3 and 17, 1921, missing.)
Bombay.....	Oct. 23-Dec. 24.....	7	6	
Karachi.....	Nov. 6-Dec. 31.....	5	5	
Do.....	Jan. 1-7.....	2	1	
Madras.....	Dec. 11-17.....	1		
Madras Presidency.....	Nov. 13-Dec. 31.....	2,047	1,438	
Do.....	Jan. 1-7.....	377	288	
Rangoon.....	Oct. 1-Dec. 31.....	139	129	
Do.....	Jan. 1-7.....	10	9	
Indo-China:				
Saigon.....				Nov. 6-Dec. 10, 1921: Rodent plague, 7.
Italy:				Total, Oct. 16-Nov. 27, 1921: Cases, 8 (of which 1 doubtful); deaths, 5.
Catania.....	Nov. 27.....	1	1	
Naples (Province)— Torre Annunziata.....	Oct. 22-Dec. 27.....	2		17 miles from city of Naples.
Venice.....	Oct. 27.....	1		
Java.....				Islands of Java and Madoera, Nov. 1-30, 1921; deaths, 763.
East Java— Soerabaya.....	Oct. 30-Dec. 10.....	11	12	
Madagascar:				Present.
Tananarive.....	Feb. 4.....			
Mauritius (Island).....	Oct. 30-Nov. 5.....	37	31	
Mesopotamia:				
Bagdad.....	Oct. 1-31.....	1	1	
Mexico:				Dec. 18-31, 1921: Infected rodents found, 5; total, Jan. 1-Dec. 31, 1921, infected rodents, 322; Jan. 1-Feb. 11, 1922, 8 plague-infected rodents.
Tampico.....				One infected rodent caught Dec. 5, 1921.
Vera Cruz.....				Nov. 17-Dec. 15, 1921; Cases, 63; deaths, 22. Occurring in Callao, Huacho, Huaras, Lima, Magdalena Vieja, Paíta, Salaverry, and Sechura.
Peru.....				Year, 1920: Deaths, 30.
Callao.....	Nov. 1-30.....			
Callao-Lima (Dept.).....	Dec. 16-31.....	31	13	
Do.....	Jan. 1-15.....	28	12	
Portugal:				
Lisbon.....	Dec. 15.....	1	1	
Portuguese West Africa:				
Angola— Loanda.....	Oct. 9-Nov. 5.....		2	
Rhodes (Island) (Aegean Sea).....	Oct. 13.....	3	1	
Siam:				
Bangkok.....	Oct. 23-Dec. 10.....	5	5	
Straits Settlements:				
Singapore.....	Nov. 6-12.....	2	2	
Syria:				
Beirut.....	Oct. 9-Nov. 20.....	10	4	
Turkey:				
Constantinople.....	Jan. 1-7.....	1		
Union of South Africa:				
Orange Free State— Bothaville.....	Nov. 19.....			Plague-infected mouse found.
Hoopstad.....	Dec. 4-10.....	1		In native herd boy.
On vessel:				
S. S. Polycarp.....	Feb. 3.....	1		At Para, Brazil, from Ceara, via Manaus, Maranham, and Para for New York.

SMALLPOX.

Arabia:			
Aden.....	Dec. 25-31.....		1
Do.....	Jan. 8-14.....		1
Bolivia:			
La Paz.....	Aug. 1-Oct. 31.....	42	28

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 31, 1921, to Feb. 24, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Bahia.....	Nov. 6-Dec. 17....	4	.....
Rio de Janeiro.....	Nov. 13-Dec. 31....	13	2	
Do.....	Jan. 1-14.....	6	1	
Sao Paulo.....	Oct. 31-Nov. 20....	2	.....
British East Africa:				
Uganda.....	Aug. 1-Sept. 30....	7	.....	Reports of inspectors, cases, 4.
Canada:				
Manitoba.....				Year 1921: Cases, 71.
Winnipeg.....	Nov. 20-Dec. 3....	2	.....
New Brunswick—				
Charlotte County.....				Dec. 17, 1921: 31 cases previously reported, occurring at Andersonville and Blacks Harbor,
St. Stephen.....	Dec. 11-17.....	2	.....	Dec. 18-24, 1921: Cases, 3. Dec.
Restigouche County.....	Dec. 11-31.....	3	.....	25-31, 1921: Cases, 2.
York County.....	Dec. 11-17.....	1	.....
Ontario—				
Fort William and Port Arthur.....	Jan. 1-21.....	3	.....
Hamilton.....	Jan. 22-28.....	3	.....
Kingston.....	Jan. 17-23.....	3	.....	Jan. 16-20, 1922: Two cases reported.
Niagara Falls.....	Dec. 11-24.....	2	.....
Do.....	Jan. 15-Feb. 4....	11	.....	A larger number unofficially reported.
Ottawa.....	Dec. 11-24.....	17	.....
Do.....	Jan. 1-Feb. 11....	24	.....
Sault Ste. Marie.....	Jan. 15-21.....	1	.....
Toronto.....	Dec. 11-24.....	4	.....
Do.....	Jan. 1-28.....	36	.....
Windsor.....	Jan. 8-14.....	1	.....
Quebec—				
Montreal.....	Dec. 11-24.....	1	.....
Saskatchewan—				
Regina.....	Jan. 1-7.....	1	.....
Saskatoon.....	Dec. 1-18.....	6	.....
Canal Zone:				
Ancon.....				Admitted to hospital by transfer from Panama, Nov. 30, 1921, 1 case. Arrived on sailing vessel from a village on southcoast.
Ceylon:				
Colombo.....	Nov. 27-Dec. 3....	1	.....	Port case.
Chile:				
Concepcion.....	Nov. 23-Dec. 19....	.....	22	Nov. 15-21, 1921: Present. In vicinity, at Hualqui, cases 32; deaths, 5. Dec. 4-17, 1921: Present.
Coronel.....	Nov. 15-Dec. 17....	.....	.....	Present.
Curanilahue.....	Nov. 15-21.....	4	.....
Talcahuano.....	Nov. 15-Dec. 24....	6	.....
Temuco.....	Nov. 15-21.....	9	.....
Valparaiso.....	Oct. 23-Dec. 31....	.....	94	
China:				
Amoy.....	Nov. 16-Dec. 31....	.....	7	Nov. 23-29, 1921: Present.
Antung.....	Nov. 28-Dec. 18....	4	1	
Chungking.....	Nov. 6-Dec. 10....	.....	.....	Present.
Foochow.....	Nov. 6-Dec. 31....	.....	.....	Do.
Do.....	Jan. 1-7.....	.....	.....	Do.
Hankow.....	Nov. 13-Dec. 31....	.....	.....	Do.
Harbin.....	Nov. 14-Dec. 11....	5	.....
Do.....	Dec. 26-Jan. 1....	2	.....
Hongkong.....	Dec. 3-31.....	5	.....
Mukden.....	Nov. 20-Dec. 31....	.....	.....	Present.
Nanking.....	Nov. 10-Dec. 17....	.....	.....	Do.
Shanghai.....	Oct. 31-Dec. 31....	67	194	Cases, foreign: Deaths, Chinese and foreign. Jan. 14, 1922: Conditions serious.
Do.....	Jan. 2-8.....	6	43	Cases, foreign: Deaths, native. Jan. 14, 1922: Seriously prevalent.
Tientsin.....	Dec. 11-17.....	2	.....	In Mission Hospital.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 31, 1921 to Feb. 24, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Colombia:				
Cartagena.....	Nov. 22-28.....		1	
Cuba.....				Dec. 4-10, 1921: Cases, 151; in two provinces.
Antilla.....	Dec. 12-31.....	3		At Preston.
Do.....	Jan. 8-Feb. 4.....	13	1	
Cienfuegos.....	Jan. 22-28.....	1		From outside city limits.
Santiago.....	Jan. 1-31.....	5		
Czechoslovakia:				
Prague.....	Dec. 18-24.....		42	
Dominican Republic:				
Puerta Plata.....	Jan. 13.....	100	5	In district, widely diffused with 100 estimated cases with 100 deaths.
San Pedro de Macoris.....	Nov. 20-Dec. 31.....	31	1	Estimate of about 500 cases of smallpox in the district of Macoris; of this amount 50 within the city limits.
Do.....	Jan. 14-27.....	63		
Santo Domingo.....	Nov. 15-Dec. 5.....			In district 401 cases estimated. Dec. 17-24, 1921: Present in vicinity. Jan. 9-16, 1922: In surrounding country, 1,745 cases (estimated).
Fiume.....				Dec. 27, 1921-Jan. 2, 1922: Cases, 2.
Ecuador:				
Guayaquil.....	Nov. 16-Dec. 31.....	7		And vicinity.
Do.....	Jan. 1-15.....	1		
Egypt:				
Alexandria.....	Nov. 26-Dec. 2.....	1	1	
Cairo.....	Nov. 26-Dec. 2.....	2		
Port Said.....	Dec. 20-26.....	1		
Finland.....				Nov. 16-30, 1921: 1 case.
Great Britain:				
Manchester.....	Jan. 1-7.....	4		
Nottingham.....	Dec. 4-31.....	18		
Do.....	Jan. 8-14.....	2		
Haiti.....				Jan. 22-28, 1922: A few cases.
Cape Haitien.....	Dec. 11-24.....	8		
Do.....	Jan. 1-29.....	13	1	
Port au Prince.....	Dec. 11-31.....			Present.
Do.....	Jan. 15-21.....	2		
India.....				Oct. 2-8, 1921: Deaths, 28. Oct. 23-29, 1921: Deaths, 43.
Bombay.....	Oct. 23-Dec. 10.....	2	1	
Calcutta.....	Nov. 13-Dec. 24.....	26	19	
Karachi.....	Nov. 11-Dec. 31.....	28	9	
Do.....	Jan. 1-7.....	7	3	
Madras.....	Nov. 13-Dec. 31.....	183	59	
Do.....	Jan. 1-7.....	51	18	
Rangoon.....	Oct. 1-Dec. 31.....	6		
Italy:				
Genoa.....	Nov. 10-20.....	1		
Messina.....				
Messina.....	Nov. 28-Dec. 4.....	1		
Pettineo.....	Nov. 14-Dec. 4.....	2		
Japan:				
Taiwan Island.....	Dec. 1-20.....	2	1	
Java:				
West Java—				
Bandjeng.....	Nov. 18-Dec. 8.....	2		
Batavia.....	Nov. 18-Dec. 22.....	11	9	City and province.
Buitenzorg.....	Nov. 25-Dec. 8.....	7	1	13 cases, with 3 deaths, not locally stated.
Krawang.....	Nov. 18-24.....	1		
Lebak.....	Nov. 18-Dec. 8.....	7	4	
Pandeglang.....	Nov. 25-Dec. 1.....	1	1	
Tangerang.....	Nov. 18-Dec. 8.....	5	1	
Mesopotamia:				
Bagdad.....	Oct. 1-Nov. 30.....	117	50	Epidemic with high mortality in November, 1921.
Mexico:				
Chihuahua.....	Dec. 5-11.....		1	
Do.....	Jan. 23-29.....		1	
Guadalajara.....	Nov. 1-Dec. 31.....	6		
Mexico City.....	Nov. 20-Dec. 24.....	51		
Saltillo.....	Jan. 29-Feb. 4.....		1	From San Salvador, Zacatecas.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 31, 1921, to Feb. 24, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico—Continued.				
San Luis Potosi.....	Dec. 18-24.....	.....	2	
Do.....	Jan. 8-14.....	.....	2	
Torreón.....	Dec. 1-31.....	134		
Do.....	Jan. 1-31.....	.....	78	
Panama:				
Bocas del Toro Province—				
Sursuba.....	Jan. 18.....	10		Village 24 miles from Almirante.
Chiriqui Province.....	Dec. 22.....	.....		Present.
Do.....	Jan. 26.....	.....		Present with center of prevalence at Bosquete Bajo.
Panama.....	Dec. 14.....	1		On Dec. 21, 1921: 1 additional case from country district of Sabanas, admitted to hospital. Total admissions, Jan. 1-Dec. 21, 1921, 207.
Peru:				
Lima.....	Nov. 1-30.....	.....	2	
Poland.....				Aug. 14-Oct. 8, 1921: Cases, 161; deaths, 33. Exclusive of Brest-Litovsk, Minsk, and Wilno districts.
Portugal:				
Lisbon.....	Nov. 13-Dec. 31...	48	12	
Portuguese East Africa:				
Loaresso Mar-aues.....	Oct. 1-Nov. 5.....	2	4	
Portuguese West Africa:				
Angola—				
Loanda.....	Oct. 9-Nov. 3.....	.....	3	
Rumania:				
Bucharest.....	Nov. 1-30.....	23		
Russia:				
Estonia.....	Oct. 1-Dec. 31.....	38		
Latvia.....	Oct. 1-Nov. 30.....	55		
Serbia:				
Belgrade.....	Oct. 2-Nov. 26.....	16	4	
Siam:				
Bangkok.....	Oct. 23-Nov. 5.....	1		
Spain:				
Barcelona.....	Jan. 8-14.....	.....	1	
Huelva.....	Oct. 1-Nov. 30.....	.....	2	
Malaga.....	Nov. 1-Dec. 31.....	.....	60	
Seville.....	Nov. 16-Dec. 31.....	.....	7	
Do.....	Jan. 8-14.....	.....	1	
Straits Settlements:				
Singapore.....	Nov. 6-Dec. 24.....	49	13	
Switzerland:				
Glarus, Canton.....	Dec. 10.....	.....		Epidemic.
Zurich.....	do.....	2		In vicinity.
Syria:				
Adana.....	Dec. 18-24.....	.....		Present.
Do.....	Jan. 1-14.....	.....		Do.
Aleppo.....	Dec. 18-24.....	.....		Do.
Do.....	Jan. 1-7.....	.....		Do.
Alexandretta.....	do.....	.....		Do.
Beirut.....	Oct. 9-Nov. 13.....	5	2	
Cecilia.....	Jan. 8-14.....	.....		Do.
Diarbekir.....	Dec. 18-24.....	.....		Do.
Do.....	Jan. 1-14.....	.....		Do.
Mersina.....	Dec. 18-24.....	.....		Do.
Do.....	Jan. 1-7.....	.....		Do.
Urfa.....	Dec. 18-24.....	.....		Do.
Do.....	Jan. 1-14.....	.....		Do.
Tunis:				
Tunis.....	Nov. 26-Dec. 23.....	17	15	
Do.....	Jan. 1-7.....	.....	1	
Turkey:				
Constantinople.....	Nov. 27-Dec. 24.....	20	4	
Union of South Africa:				
Cape Province.....	Nov. 5-Dec. 10.....	.....		Outbreaks.
Natal.....	Oct. 23-Nov. 12.....	.....		Do.
Orange Free State.....	Oct. 23-29.....	.....		Do.
Transvaal.....	Oct. 23-Dec. 10.....	.....		Do.
Yugoslavia:				
Bosnia Herzegovina.....	July 3-9.....	2		July 3-30, 1921: Cases, 37.
Croatia Slavonia.....	do.....	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 31, 1921, to Feb. 24, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Yugoslavia—Continued.				
Dalmatia.....	July 3-9.....	1		
Serbia.....	do.....	3		
Slavonia.....	do.....	1		
Voivodina.....	do.....	3		
On vessel: S. S. West O'Rowa.....	Jan. 5-8.....	3	1	At Kobe, Japan, from Shanghai, China.

TYPHUS FEVER.

Algeria:				
Algiers.....	Nov. 1-Dec. 31....	3		
Do.....	Jan. 11-30.....	1		
Oran.....	Dec. 21-31.....	1		
Do.....	Jan. 1-10.....		1	
Austria:				
Vienna.....	Dec. 4-31.....	10		
Bolivia:				
La Paz.....	Aug. 1-Oct. 31....	83	65	
Bulgaria:				
Sofia.....	Dec. 18-24.....	1		
Chile:				
Valparaiso.....	Oct. 23-Nov. 26....		6	
Concepcion.....	Nov. 22-Dec. 4....		2	
China:				
Harbin.....	Nov. 7-Dec. 25....	12		Jan. 23, 1922: Reported extending from Soviet Russia, along railway line to maritime Provinces.
Do.....	Dec. 26-Jan. 1....	1		
Egypt:				
Alexandria.....	Nov. 19-Dec. 31....	3	1	
Do.....	Jan. 15-21.....	4		
Cairo.....	Oct. 1-Dec. 2....	9	6	
Germany:				
Breslau.....	Dec. 25-31.....	2	1	
Do.....	Jan. 1-15.....	37	4	
Hamburg.....	Dec. 11-17.....	4		
Great Britain:				
Glasgow.....	Dec. 25-31.....	1		
Italy:				
Palermo.....	Jan. 15-28.....	3	1	
Mesopotamia:				
Bagdad.....	Oct. 1-Nov. 30....	2	9	
Mexico:				
Mexico City.....	Nov. 20-Dec. 24....	200		Including municipalities in Federal District. Dec. 25-31, 1921: Present. Present.
San Luis Potosi.....	Dec. 18-24.....		1	
Do.....	Jan. 8-28.....			
Palestine:				
Jerusalem.....	Dec. 27-Jan. 16....	5		
Poland:				
				Aug. 14-Oct. 8, 1921: Cases, 1,431; deaths, 107. Exclusive of Brest-Litovsk, Minsk, and Wilno districts. Nov. 20-Dec. 10, 1921: Cases, 1,162; deaths, 89.
District—				
Bialystok.....	Nov. 20-Dec. 10....	116	3	
Galicia—				
Lemberg.....	Jan. 3.....	229		
Kielce.....	Nov. 20-Dec. 10....	31	8	
Krakow.....	do.....	45	6	
Lodz.....	do.....	67		
Lublin.....	do.....	59		
Lwow.....	do.....	121	16	
Nowogrod.....	do.....	249	15	
Polesia.....	do.....	83	5	
Stanislavow.....	do.....	88	8	
Tarnopol.....	do.....	86	17	
Volhynia.....	do.....	89	4	
Warsaw.....	do.....	81	2	
Warsaw City.....	do.....	47	5	
Do.....	Jan. 11.....	50		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from Dec. 31, 1921, to Feb. 24, 1922—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Portugal:				
Oporto.....	Jan. 8-28.....	2	2	
Rumania:				
Bucharest.....	Nov. 1-30.....	3		
Chisinau.....	do.....	7		
Russia:				Nov. 28-Dec. 10, 1921: In Soviet Russia, cases, 7,681.
Esthonia.....	Oct. 1-Dec. 31.....	53		
Latvia.....	do.....	127		
Perm.....	Nov. 23-Dec. 10.....	1,408		Oct. 1-31, 1921: Cases, 539; Nov. 1-30, 1921: Cases, 2,389.
Serbia:				
Belgrade.....	Oct. 2-Nov. 26.....	3	2	
Siberia:				Jan. 23, 1922: Present in western districts.
Chita.....	Dec. 26.....			Epidemic.
Turkey:				
Constantinople.....	Nov. 20-Dec. 31.....	19		
Do.....	Jan. 1-14.....	13		
Union of South Africa:				
Cape Province.....				Oct. 23-Dec. 10, 1921: Outbreaks. One death in European at Jenessville, Dec. 6, 1921.
East London.....	Oct. 30-Nov. 5.....	1		Outbreaks. Stated to be prevalent only in Newcastle District.
Natal.....	Nov. 5-Dec. 10.....			Outbreaks.
Orange Free State.....	Nov. 13-Dec. 3.....			Outbreaks.
Venezuela:				
Maracaibo.....	Dec. 20-26.....		1	
Yugoslavia:				July 3-30, 1922: Cases, 13.
Bosnia Herzegovina.....	July 3-9.....	1		
Croatia—				
Zagreb.....	Jan. 1-14.....	2		
Montenegro.....	July 3-9.....	2		

YELLOW FEVER.

Mexico.....				Year 1921: Cases, 115; deaths, 53; Total: Cases, 7; deaths, 4.
Colima (State).....				
Colima.....	Oct. 27.....	4	3	
Manzanillo.....	Aug. 21.....	3	1	
Jalisco (State).....				Total: Cases, 13; deaths, 7.
Guadalajara.....	Nov. 1-30.....	1	1	Imported.
Puerta Vallarta (Las Penas).....	Oct. 5.....	11	5	Dec. 19, 1921; Present.
Tonila.....	Aug. 31.....	1	1	
Quintana Roo (Territory)—				
Payo Obispo.....	Aug. 8.....	1	1	
Sinaloa (State).....				Total: Cases, 18; deaths, 9.
Culiacan.....	Sept. 17.....	4	1	
Guanamuchil.....	Oct. 10.....	1		
Mazatlan.....	Aug. 21.....	1	1	Imported.
Palmar de los Leales.....	Sept. 30.....	12	7	
Tamaulipas (State).....				Total: Cases, 1; deaths, 1.
Tampico.....	Jan. 11.....	1	1	
Vera Cruz (State).....				Total: Cases, 75; deaths, 31.
Alamo.....	June 21.....	4	1	Oil camp.
Alvarado.....	July 3.....	1	1	
Barra de Penn.....	July 18.....	1	1	
Cordoba.....	Sept. 22.....	5	3	
Cosamaloapam.....	July 18.....	14	6	
Nogales.....	Oct. 28.....	1	1	
Orizaba.....	do.....	1		
Papantla.....	Jan. 14.....	6	3	
Providencia.....	Oct. 28.....	3		
Purga.....	Feb. 7.....	1	1	
Rancho de Santa Rosa.....	Oct. 8.....	2		
Rancho "El Jaguey".....	Sept. 14.....	2	2	
San Pablo (Papantla).....	Sept. 12.....	1		
San Ildefonso.....	Oct. 17.....	2		
Tierra Blanca.....	Sept. 24-Nov. 12.....	4	3	
Tlaxotalpan.....	Sept. 14.....	1	1	
Tuxpan.....	Jan. 3.....	8	2	
Vera Cruz.....	Jan. 15.....	18	7	Two of these cases imported. Dec. 20-26, 1921: Cases, 1; deaths, 1. Imported.